FEBRUARY
1952
VOLUME 16
NUMBER 1

JOURNAL OF CONSULTING PSYCHOLOGY

AMERICAN PSYCHOLOGICAL ASSOCIATION

JOURNAL OF CONSULTING PSYCHOLOGY

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The Journal of Consulting Psychology is published bi-monthly in February, April, June, August, October, and December, the yearly volume comprising approximately 480 pages. The subscription per year is $5.00, foreign $5.50, single number $1.00.

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JOURNAL OF CONSULTING PSYCHOLOGY

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Changes in Goals with Adult Increasing Age

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and George H. Johnson
University of New Mexico

Although it is possible to infer certain adult age changes in goals and motivations from the general literature relating to changes in adjustment, personality, interests, and attitudes during maturity and old age [4], there is almost a complete absence of direct data on goals or purposes characterizing different adult ages beyond twenty. The present paper presents certain evidence that not only bears rather directly on this issue but shows marked age trends during the adult years.

Procedure

In connection with a general survey[1] of the job satisfaction and job adjustment of teachers of different ages the following question was asked:

> What would you most like to be doing ten years from now? The purpose of this question is to get some picture of what your own vocational or other goals and plans are for the future. Please be as explicit as you can, but indicate your general feelings even if very vague.

Responses to this question (written as free-response answers) were categorized into one of nine categories: (1) Be retired, no plans stated; (2) Be retired, some mention of plans; (3) Remain in educational work, same job or no mention of specific job; (4) Remain in education, different job or promotion; (5) Get into other kind of work (i.e., out of educational work); (6) Get married and/or have a family; (7) Have own home or family, be a housewife; (8) Don't know or indefinite; (9) No reply to question.[2] Tabulations were by IBM. In reporting the results below, categories "1" and "2" (relating to retirement), which were about equally represented in the responses, were combined. Although categories "6" and "7" (relating to marriage and home) were also combined, only two cases of single women (age 30-34) fell in category "7," and no married women fell in category "6"; thus for practical purposes the categories may be considered as separately treated in the section giving the results.

The returns here reported were obtained from high school and elementary school teachers, the present sample representing a 39 per cent return of questionnaires placed in individual teachers' mail boxes in their school with a stamped, addressed, return envelope, and a covering letter. The age, sex, and marital status of the respondents is reported in Table 1. Single men were not represented in the returns in sufficient numbers to warrant inclusion in the present report.

Table 1

Distribution of the Subjects (467 Single Women, 280 Married Women, and 218 Married Men) According to Age, Sex, and Marital Status

Group	Age by Semidecades								
	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Single Women	44	39	38	58	66	61	73	60	28
Married Women	17	29	18	29	52	54	48	25	8
Married Men	—	9	25	44	53	40	19	21	7

Results and Discussion

The major results are charted in Figures 1, 2, and 3 for single women, married women, and married men respectively. In these charts liberty has been taken in plotting percentages

[1] Later papers by G. H. Johnson will describe the instrument used in the survey and the general results relating to job satisfaction and adjustment.

[2] Fifty-seven subjects failed to respond, and 11 "didn't know" or gave indefinite replies.

for all the age groups mentioned in Table 1, even though the base N in some instances is extremely small. The only defensible reason for this procedure is that the age trends were so pronounced and regular that the small Ns in the youngest and oldest age groups failed to alter these trends. One would expect, even without the data at hand, that the oldest and youngest adults would be fairly homogeneous with respect to broad major goals.

Figure 1 relates to single women. It will be noted that, in the 20's, most report plans or hopes to be married. By the early 30's only about a fifth express this "goal," and after 40 there is practically no mention (only 3 cases in the 40–44 group) of this goal. Rising, as the curve for "marriage" declines, is mention of desire for *different* job (still in educational work) or a promotion; and somewhat later a peak occurs in plans to remain in the same type of work. And by the late 40's substantial portions are beginning to mention retirement as falling within their next ten-year plan.

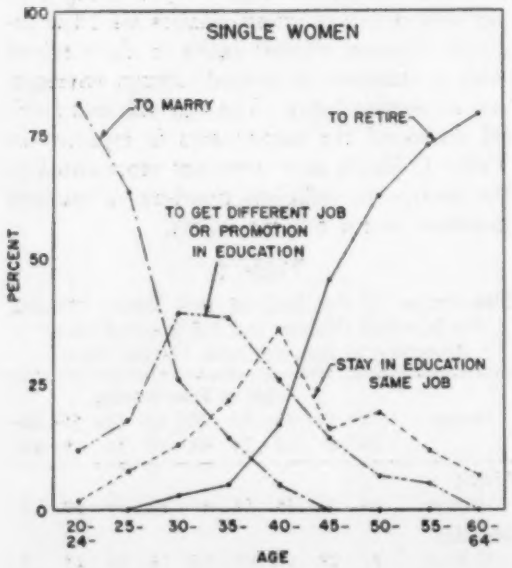

Fig. 1. Age trends in goals of single women as reflected in the response of women teachers of various ages to the question, "What would you most like to be doing ten years from now?"

To what extent is one justified in reading between the lines, in speculating as to what lies behind these trends? Although the possibility must not be overlooked that the drop in marriage hopes or plans in the 20's results from the marriage of those who wish to marry, the present writers venture the suggestion that the decrease in marriage expectations and the seemingly correlated (at least in time) increase in job expectations represent a reorientation in goals and purposes of some considerable significance for single women, a reorientation that may be fraught with substantial stress, which may reveal itself in dissatisfaction with many aspects of living and in general unhappiness. Considerable anecdotal evidence[3] can be marshalled in support of this hypothesis. Single women students, for example, in classes in the psychology of maturity and old age taught by one of the writers occasionally discuss the issue in personal conferences; indeed, one student undertook to interview informally other single women of her own age (30-35) and reported almost unanimous concern about the matter. Thus the decline in the "marriage" curve in Figure 1, in the present writers' opinion, is due to increasing recognition that the marriageable age is slipping by rather than due to selective sampling.

Some further support for this hypothesis, with reference at least to the suggestion of increased stress, can be found in the literature. Phillips and Greene [6] report a peak of neurotic response on the Bernreuter at about age 35 in single women teachers, and then a shift toward better adjustment, whereas among married women teachers increased age is associated with better adjustment score. Willoughby [7] reports an "N-shaped" curve of neurotic score with age on his revision of the Thurstone inventory. This trend was clearest in the case of single women with the first peak of "neuroticism" at age 30. Data of Davis [2] show a secondary peak for the initiation of autoerotic practices at about age 28 for single women, suggesting a certain adjustment to failure to marry. Altogether, the evidence suggests that the age of approximate-

[3]Some systematic evidence on this point is being obtained by the senior writer by means of a checklist of problems of adult life which includes such problems as "getting the most out of life without marriage" and "concerned whether I will ever get opportunity to marry." Each of several hundred problems is rated according to degree of seriousness.

ly 30 is for the single women a rather crucial period, characterized by stress which increases as she approaches 30 and remains unmarried, and which decreases as she is able to shift her goals and values and find a new life orientation in occupation.

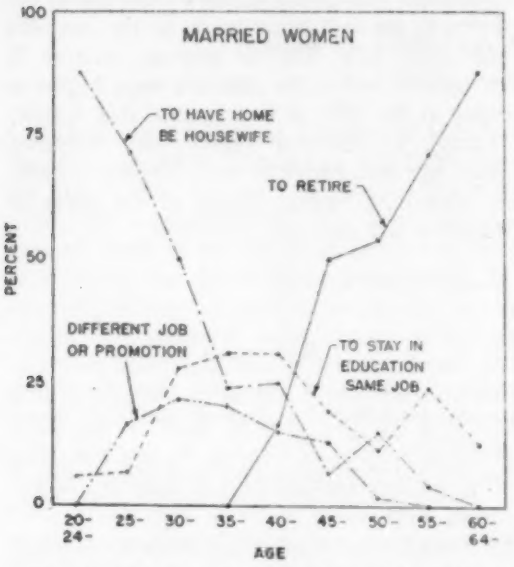

Fig. 2. Age trends in goals of married employed women as reflected in the responses of women teachers of various ages to the question, "What would you most like to be doing ten years from now?"

Figure 2 shows the trends in goals for married women. In the 20's especially, but also in the early 30's, these married women who are working typically express as their goals that of having their own home and family and the wish to be a housewife. Their desire to stay in the same job (with a lesser—compared to single women—desire for a different job or promotion) reflects the secondary role of occupation in their lives. Desire for retirement begins to arise, as in the case of the single women, in the 40's and climbs rapidly as age increases.

Among married men, trends for whom are presented in Figure 3, there is a clear and marked emphasis upon vocational objectives. In young adulthood, an almost universal desire to achieve advancement is implied in the high frequency of mention of promotions and other jobs in the educational field among their ten-year plans. Some vocational dissatisfaction and restlessness—whether the result of economic pressures that cannot be resolved on teachers' salaries or the result of failure to advance as rapidly as hoped—is evident in the late 30's and early 40's. At these ages about a quarter mention a hope to be in some kind of work other than education.[4] Such vocational restlessness in the late 30's or early 40's is often assumed to exist but does not show up in general labor turnover statistics. It may characterize only the professional and business group. In certain other material collected by the senior writer, evidence for vocational dissatisfaction among males also appeared about this time (see [5], pp. 235-236, for brief discusssion).

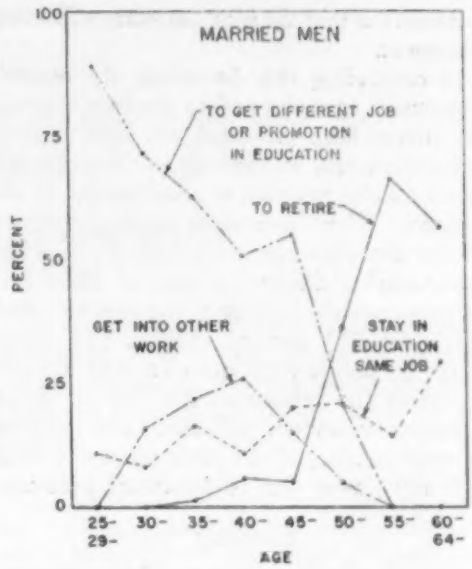

Fig. 3. Age trends in goals of married men as reflected in the responses of married male teachers to the question, "What would you most like to be doing ten years from now?"

Emphasis up to age 50 among married men seems to be on vocational advancement; thereafter wish to stay on the same job is more frequently mentioned than other jobs or promotion. This finding is consistent with other age studies bearing on desire for vocational advancement. After 50 the typical hope (or ex-

[4]Fewer women than men indicated a desire to get into other types of work; for both married and single women the peak frequency was at age 35–39 with 10 and 12 per cent respectively so reporting.

pectation) is that the next ten years will bring retirement.

In concluding this discussion, the reader's attention is again invited to the fact that the age curves here presented are both regular and pronounced, in contrast to the slight age trends usually reported in adult studies of adjustment. These data show striking shifts in orientations with age, with different strivings characterizing different phases of adult life. Further research, perhaps of the type described by Buhler [1] and by Frenkel [3] which strives by semiclinical interview and analysis to fathom the "phases of life," or by means of projective devices, will likely add much to an understanding of the adult years and their basic adjustment and readjustment problems.

Summary

Four hundred sixty-seven single women, 280 married women, and 218 married men teachers, ages 20 to 65, responded to the question, "What would you most like to be doing ten years from now?", a question asked in connection with a general survey of the job satisfaction and adjustment of teachers. An analysis of the replies by semidecades indicates marked changes in orientation with increasing age. Hope to marry, expressed by the majority of single women in their 20's, is mentioned by very few after 30. After 30 desire for vocational advancement is increasingly mentioned. It is suggested that this shift from a marriage to a vocational orientation at about 30, a circumstance of considerable importance to single women, may be accompanied by definite stress which is resolved only when the goal reorientation is accomplished. Married working women (teaching) show in the 20's a great desire to be in their own homes as housewives; vocational goals are more secondary than in the case of single women. Married men are clearly vocationally oriented. In young adulthood and up to the late 40's, emphasis upon the part of the majority appears to be on vocational advancement. Some vocational restlessness appears, reflected in the desire to get into other work, in the late 30's and early 40's. For all groups, interest in retirement within the next ten years begins to occur in the 40's. It is suggested that further research in changing values with increased adult age will prove to be extremely fruitful in promoting understanding of the years of maturity and old age.

Received April 18, 1951

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Personality Characteristics of the Institutionalized Aged [1]

Helen H. Davidson and Lorraine Kruglov[2]
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The world is becoming a society of oldsters and of youngsters. Figures for the 1950 census report that between the years 1940 and 1950, the number of children under 10 increased about 40 per cent; the number of persons beyond the age of 65 increased about 37 per cent. While educational and psychological studies are plentiful with regard to young children, there has been a dearth of such investigations of old people. Until the last few years the concern of psychologists with the older age groups in our population was directed at physical and intellectual changes with age. Only very recently has interest arisen in the personality changes that accompany the aging process.

For many years now the Rorschach has been used to study the personality characteristics of specific age groups, thus disclosing developmental trends. It has been found, for instance, that there is a characteristic personality structure which changes from one developmental stage to another: for example, preadolescents often show a great deal of constriction and rigidity characteristic of the latency period; adolescents show a marked swing toward introversion; the adult years are characterized by a general expansiveness with an introversive swing reappearing around the middle forties. The old, however, have been neglected in these developmental studies. In only three published investigations have oldsters, living in institutions or at home, been studied by the Rorschach method.

[1]Presented in condensed form at the American Psychological Association, State College, Pa., September 1950.

[2]We wish to acknowledge the encouragement and cooperation of Dr.Frederick Zeman, Chief of Medical Service, Home for the Aged and Infirm Hebrews of New York.

It is interesting to note that Hermann Rorschach himself was aware of developmental changes in the reaction to the blots. With reference to the old, he noted the following:

1. The individual loses the capacity for introversion and becomes more coartated with increasing age. . . . The extent to which capacity for introversion is retained in old age probably depends upon the degree to which it was present in youth [7, p. 96].
2. Results of very aged normal subjects of 70 to 80 years of age closely resemble those of cases of dementia simplex [7, p 96].
3. Components of intelligence are differently developed at different ages and variation will occur even after the fortieth year [7, p. 66].
4. Age increases the tendency to stereotyped associations and decreases the freedom of associations [7, p. 62].

In summary, Rorschach's typical case of normal advanced age (female, age 80, well preserved mentally) was characterized by "coartation of experience type, unclear forms, marked stereotypy" [7, pp. 140–142].

Recent studies confirm the findings of Rorschach. Walter Klopfer [4] studied the personality patterns of a group of 50 old people, 30 of whom were living in a home for the aged, and 20 of whom were living at home, by means of the Rorschach test. The majority of subjects showed a personality pattern characterized by:

1. Intellectual impairment in that they were slower, less productive and less efficient than individuals of equivalent capacity in the general population.
2. Restricted and often stereotyped thought content.
3. Loosening of the intellectual ties to reality.
4. Diminished capacity for making use of inner resources.
5. Difficulty in forming adequate social relationships.

Klopfer indicated that a comparison of the main determinant curves of the institutionalized and noninstitutionalized subjects is in the direction of similarity rather than dissimilarity between the two groups.

Prados and Fried [6] studied the personality structure of a group of 35 older adults ranging in age from 50 to 80 by means of the Rorschach method. Their subjects were all "normal"—i.e., no individual had any mental defect that would have required him or her to seek the protection of an institution. All subjects were able to carry on their everyday lives. The characteristic personality structure of the subjects was marked by:

1. Intellectual impairment.
2. A flat, depleted emotional life.
3. Little inner conflict.
4. Loss of control over instinctual demands and reoccurrence of infantile traits.
5. Insufficient capacity for establishing adequate rapport with the environment.

Chesrow, Wosika and Reinitz [1] reported that the Rorschach test administered to 20 aged white males revealed:

1. Delayed responses.
2. Low number of responses.
3. Stereotyped thinking.
4. Intellectual and emotional constriction.
5. Feeling of impotence.

In general, Rorschach findings revealed that the average old person was not as productive or as efficient intellectually as the younger adult, was less mature and socially less responsive, presenting a picture of insecurity, apathy, and constriction.

The present study was designed to answer the following questions: What are the major personality characteristics of a group of institutionalized old people? What is their adjustment capacity? What is the extent of individual variation within the group and variation due to age and sex? What background factors are related to adjustment capacity?

The findings presented here are to be interpreted as *clinical* signs rather than as *statistically* significant trends. Differences between means were merely inspected and not subjected to statistical analysis because of the limited number and selectivity of the subjects in the sample. The present results should primarily offer clues for the formulation of hypotheses.

Procedure

Subjects. The Rorschach was administered to 46 people, 22 women and 24 men, of the Jewish faith, ranging in age from 61 to 91, living in the Home for the Aged and Infirm Hebrews of New York. In order to qualify for admission to the Home all people must be considered physically and mentally fit. Some of the subjects for this study were referred to the staff psychologists because they presented a problem of one sort or another, while others were referred merely for purposes of institutional research. For each individual, information concerning his marital status, number of children, last occupation and educational level, was obtained from the social service division. These data are summarized in Table 1.

The average age for the total group is 76

Table 1
Background Characteristics of the Sample

	Men (N=24)	Women (N=22)	Total (N=46)
Age Range	66–91	61–87	61–91
Mean	77.4	74.3	75.9
Marital Status*			
Single	6	3	9
Widowed or divorced	8	12	20
Married	9	7	16
Children*			
One or more children	14	17	31
No children	9	5	14
Educational Level			
No education	2	5	7
Elementary or Hebrew educ.	11	10	21
Technical, H.S., *Gymnasium*	7	2	9
College	0	1	1
Unknown	4	4	8
Occupation			
Unskilled	3	3	6
Semiskilled or skilled	12	6	18
Own business	5	1	6
Professional	4	2	6
Housewife	0	10	10

*For one man these background data were not available.

years, the women being on the average three years younger than the men. Of the 46 subjects, 78 per cent were known to have been married; 91 per cent of these had at least one child. Their educational level ranged from no education at all for 15 per cent of the sample, through elementary or Hebrew school education for 48 per cent of the sample, to high school, technical school, or *Gymnasium* education for 20 per cent of the sample. Only one person had college training. For eight persons no information concerning education was available. As for occupational level, 13 per cent were classified as "unskilled" (watchman, domestic, handyman); 39 per cent as "skilled" or "semiskilled" (carpenter, cashier, salesman); 13 per cent had owned their own business at one time; 13 per cent were classified as "professional" (music teacher, interior decorator, mechanical engineer). Ten of the women were housewives. Doctors, lawyers, and other professional groups were noticeably missing. Because of the nature of the sample, the conclusions of the present investigation are limited to an institution population of similar background.

Method. The Rorschach was administered to each subject individually and scored according to the Klopfer system. The administration of the test was done by two examiners.[3] The usual quantitative and qualitative data were obtained from the Rorschach protocols as well as an index of adjustment.

Results

Quantitative. The quantitative Rorschach results were analyzed separately for men and women, and for the younger and older aged in the sample. Those between 61 and 76 were placed in the younger age group and those between 77 and 91 were placed in the older age group. Location, determinant, and content scores are presented in Table 2 for these subdivisions as well as for the total group.

The outstanding differences in Rorschach scores between this group of old people and scores expected for a group of average adults are:

1. The low number of responses (*R*). Seventy-eight per cent of these subjects gave fewer than 20 responses.

2. Some overemphasis on form responses (*F*). More than half these cases gave more than 50 per cent *F*-responses.

Table 2

Location, Determinant, and Content Scores by Age and Sex Classification

Score	Age		Sex		Total Group
	61–76 (N=26)	77–91 (N=20)	Men (N=24)	Women (N=22)	(N=46)
Mean age	71.7	81.4	77.4	74.3	75.6
Responses (R)					
Mean R	15.0	15.0	11.8	18.5	15.0
% cases R > 20	23.1	20.0	8.3	36.4	21.8
Location					
Mean W%	36.7	36.0	39.0	34.6	36.0
Mean D+d%	55.3	57.3	54.2	57.3	56.0
Mean Dd+S%	8.0	6.7	6.8	8.1	8.0
Determinants					
Form					
Mean F	8.6	8.4	7.0	10.2	8.5
Mean F%	57.7	58.0	61.3	54.0	57.8
Mean F−	3.0	2.2	2.0	3.5	2.7
% cases F%>50	50.0	60.0	54.2	54.5	54.3
Movement					
Mean M	1.6	1.6	1.5	1.6	1.6
Mean FM	2.3	2.6	1.7	3.2	2.4
Mean m	0.0	0.1	0.0	0.0	0.0
% cases with no M	19.2	35.0	29.2	22.7	26.1
% cases FM>M	46.2	70.0	50.0	63.6	56.5
Shading and Color					
Mean Fc+c	1.3	1.2	0.8	1.8	1.2
Mean k+K+FK	0.3	0.1	0.2	0.2	0.2
Mean C′	0.1	0.1	0.1	0.1	0.1
Mean FC	0.2	0.8	0.3	0.6	0.4
Mean CF+C	0.6	0.2	0.2	0.7	0.5
Mean Sum C	0.7	0.6	0.4	1.0	0.7
% cases no color	57.7	50.0	70.8	36.4	54.3
% cases M > Sum C	53.8	60.0	62.5	50.0	56.5
Content					
Mean H	2.3	1.9	1.8	2.5	2.1
Mean A	6.4	7.3	5.4	8.4	6.8
Mean A%	46.8	55.0	47.4	53.6	50.4
Mean P	3.7	4.3	3.5	4.5	3.9

[3]We wish to express our gratitude to Dr. William Goldfarb for permission to use the protocols of 14 of the men in this sample to whom he administered the Rorschach test; the other Rorschach tests were administered by Helen H. Davidson.

3. **A high number of *F*-responses. Eighteen per cent of the total number of responses were of this nature.**

4. **A diminution of the movement responses (*M* and *FM*) with somewhat more animal action responses than human action responses. Only 74 per cent of the subjects gave any human action responses at all, while 57 per cent of the group gave more animal than human action responses.**

5. **Extreme paucity of responses to color. Only 46 per cent of the cases gave any color at all.**

6. **A limited range of interests. Human and animal responses ($H + Hd + A + Ad$) combined comprised 74 per cent of the total number of responses.**

To obtain an over-all picture of adjustment a list of 17 Rorschach adjustment indicators was used [2]. Table 3 gives the number of people who were given credit for each of the seventeen signs, for men and women separately and for the older and younger aged separately, along with summary statistics.

An analysis of the adjustment signs reveals that the aged of this sample show a decreased capacity to respond to color and shading ($\Sigma C > Fc + c + C'$), (FC, 2 or more), and to see human movement in relation to whole responses ($W : M = 2:1$). On the other hand, they gave expected performance in their lack of pure color responses (no pure C), lack of color shock, and in their low percentage of unusual responses ($Dd + S$, 10% or less).

The possession of nine or more signs may be considered to indicate adequate adjustment since this was the average score obtained by various other age groups [2]. For this group, the mean number of adjustment signs was 8.0 indicating somewhat poorer adjustment in comparison with younger groups. In the narrow age range (61–91) represented by this sample of aged, there was no decline in adjustment with age. However, there was a considerable difference in the adjustment of men and women, the mean for the women being 9.0 and for the men, 7.0. When these data were analyzed according to the percentage of people who showed adequate adjustment, that is, who gave nine or more signs, 35 per cent of the total group showed adequate or better adjustment, there being no difference between the younger and older aged. On the other hand, 45 per cent of the women gave at least nine signs compared with 25 per cent of the men who gave nine or more signs, which suggests that institutional women are somewhat better adjusted than institutional men.

Table 3

Adjustment Signs by Age and Sex Classification

Adjustment Sign	Age		Sex		
	61–76 (N=26)	77–91 (N=20)	Men (N=24)	Women (N=22)	Total (N=46)
$M > FM$	11	5	9	7	16
M, 3 or more	8	5	7	6	13
$\Sigma C > Fc + c + C'$	5	4	3	6	9
$F\%$, 50 or less	12	8	10	10	20
$Dd + S$, 10% or less	19	15	17	17	34
P, 4 or more	15	14	12	17	29
R, more than 20	6	4	2	8	10
$FC > CF$	3	9	5	7	12
FC, 2 or more	2	4	1	5	6
No pure C	24	20	22	22	44
$\%R(8,9,10) >$ 40%	9	5	6	8	14
$FK + Fc$, 2 or more	9	8	6	11	17
$W:M = 2:1$	5	3	4	4	8
$A\%$, 58% or less	16	10	14	12	26
No color shock	20	17	18	19	37
No shading shock	22	19	21	20	41
No refusals	17	13	11	19	30
Range of adjustment signs	5–14	4–15	4–14	5–15	4–15
Mean	7.8	8.2	7.0	9.0	8.0
Median	7.0	7.0	6.0	8.0	7.0
Per cent obtaining nine or more adjustment signs	35%	35%	25%	45%	35%

Qualitative. The content of the Rorschach interpretations made by the psychologists and the actual responses to the ink blots were analyzed in terms of (1) interest in the testing situation and in the examiner; (2) intellectual aspects; (3) social-emotional aspects, and (4) resources for adjustment. It should be emphasized that the analyses based on the written interpretations may be underestimates, because of the emphasis on outstanding facts when writing an interpretation.

1. *Interest in the Testing Situation and Examiner.* In general the group of old people

were cooperative, friendly to the examiner, and showed moderate interest in the test materials. Only a few subjects were apprehensive or suspicious. However, many were unsure of themselves, self-deprecatory, cautious, and afraid of being wrong, often needing approval and reassurance. For example, these are some typical responses taken verbatim from the records:

"If I say, I'll say the wrong thing" (M 61).[4]
"My mind doesn't work so well" (F 79).
"I thought you'd think I was stupid. I wish I could think what it is" (F 72).
"I'm all sick, I used to be a person, now I'm a crazy one. I used to be nice when I was young, now I'm 79, I don't know, I'm such a foolish one, I don't know nothing" (F 79).
"Whoever reads that might say she's crazy" (F 80).
"I'm too old. Before I would do much better" (M 76).

The traditional picture of the insecurity, self-deprecation, and feelings of inadequacy of the aged are supported by these findings.

2. *Intellectual Aspects.* Analysis of the Rorschach interpretations revealed that almost 50 per cent of the subjects were considered intellectually well preserved by the psychologists. On the other hand, perplexity and confusion in thinking were shown by 37 per cent of the subjects, poor contact with reality by 17 per cent, and perseveration by 22 per cent.

Four outstanding characteristics of the thinking process were observed in an analysis of individual responses:

1. An inability to name or identify what they saw, as for example, "This is an animal. I don't know what kind," "I see little things, but what they are, I don't know."
2. Identification of an object by its function, as for example, "Like a round thing, like what water comes out in park," "It could be one of those that come out of a shell," "That's a flying business, but what it is I don't know." This tendency was found by Feifel to be characteristic of young children and old people [3]. Actually there is a close relationship between the inability to name or identify and the identification of an object by function. When people are unable to name something that they recognize they tend to identify it by function. An example of this is seen in such responses as "An animal with horns, what do you call that?" or "An animal with many legs, it crawls on the ground." There were 32 occurrences of types 1 and 2 in the records of these old people.
3. Telling what the blot is not, as for example: "I wouldn't call it a Christmas tree," "It doesn't look like flowers," "It isn't a bear," "It cannot be a human being." There were 23 occurrences of this type of response.
4. Telling what is seen and immediately rejecting it or saying "I don't know" after naming what they see. There were 18 occurrences of this type of response.

3. *Social-Emotional Aspects.* The content analysis of the interpretations revealed that the staff psychologists considered 37 per cent of the group at least adequately adjusted.

On the other hand, a number of undesirable personality characteristics were observed, such as, aggressiveness and hostility in 35 per cent of the group, suspicion or paranoid features in 22 per cent, childishness, demanding, negativism or general immaturity in 37 per cent and poor or difficult social relations in 57 per cent.

Analysis of the human movement and color responses was made in order to gain further insight into the quality of the personal and social relations of the old people in the study.

There was a total of 73 human movement responses which were classified according to whether they were hostile, pleasant, or neutral in quality. Ten of the 73 responses were of the hostile type ("two men putting hands up to swear," "waiters scrapping for the table," "the devil and his wife having a fight," "human beings swinging a bird"). Twenty-four responses were of the friendly, pleasant type ("two people kissing," "two people clasping hands," "women laughing at something," "a boy and a girl at a dance," "circus men playing circus"). The remaining thirty-nine responses were classified as neutral ("someone lying in bed," "old women talking," "two figures leaning on posts," "a man sitting on something," "two males facing one another"). Men and women gave approximately the same number of human movement responses (38 for the men and 35 for the women) as well as the same number of pleasant responses. On the other hand, eight of the ten aggressive responses were given by the men, while women tended to give more of the passive, neutral type of response.

It is interesting also to observe the differ-

[4]Letter and numeral indicate sex and age of subject.

Table 4
Sex of Human Figure Seen

Sex	Men	Women
Female	9	2
Male	15	21
Female and male couples	4	0
Neither (children, people, babies, figures, etc.	10	12

ences between the men and women as to the sex of the human figure seen in the cards. Both men and women saw more male figures than female figures (probably a universal trend for all ages). However, women greatly exceeded the men in the number of males seen, while failing to see female figures. This seems to be partly a reflection of the general tendency in our culture to admire maleness and partly due to a change in their self-concept or body image. It is interesting to note that only men saw male and female couples in action.

Although men seem to have retained a richer inner life than women, the reverse is true with respect to outward living, when examined in terms of the color responses. Men gave a total of 17 color responses (10 main and 7 additional), women a total of 61 color responses (29 main and 32 additional). Four fire and blood responses (24 per cent of the total color responses) were given by the 24 men, while 10 such explosive responses (16 per cent of the total color responses) were given by the 22 women. On the other hand, the women gave 46 responses, the content of which was categorized as plants, flowers, trees, fruit, objects, and so forth (75 per cent of the total color responses) while the men gave only 10 such mild color responses (59 per cent of the total color responses). "Art" content was used by the men three times and by the women five times.

Women were decidely more responsive than men to their environment but in a more passive, dependent manner whereas men tended to be somewhat more aggressive.

4. *Resources for Adjustment.* The ways in which these old people handled their difficulties as reported in the Rorschach interpretations could be classified as in Table 5.

Table 5
Resources of Adjustment Used by Men and Women

Resources	Men* (N=24)	Women* (N=22)
Defensive or evasive	6	5
Repressed	2	1
Ambitious	5	1
Obsessive	2	0
Rigid, compulsive	9	7
Anxious	6	5
Depressed	5	3

*Some cases were classified in more than one category.

These results suggest that there was no particular way in which old people attempt to solve their problems. However, the most common defenses used were rigidity, evasiveness, anxiety, and depression. How this compares with the general population is difficult to determine.

Intragroup Variation

Individual variation within the group, although not so extensive as would be expected in a younger group, is present. Some of the records are unmistakably those of old people; some are indistinguishable from those of younger adults. The contribution of age, sex, and background factors to personality variation within the group was studied.

Age. The total group was divided according to age into a younger group of 26 people between the ages of 61 and 76, and into an older group of 20 people between the ages of 77 and 91, equally divided as to sex. Even though the average number of total responses to the Rorschach is identical for the younger and older groups (actually 15 responses), the older group showed less spontaneity ($FC>CF+C$), less self-assurance, (% cases with no M), an increase in stereotypy and conformity of thinking ($A\%$ and P), more rigidity ($F\%>50$), and less control ($FM>M$). Their interest in human beings and their concern with sex also showed a decline.

Sex. A comparison between the institutional men and women showed that women gave more responses, more animal action responses, more $F-$ responses, and more responses to color and texture. In addition there was more stereotypy and conformity of thinking among the women ($A\%$ and P). On the whole, women presented a picture of greater emotion-

ality (C), more energy (FM), along with somewhat less control ($FM > M$, $F-$). As a group women appeared better adjusted, confirming the evidence revealed in the adjustment signs and agreeing with the findings of other studies on the aged. These differences between the sexes may be a function of the life experiences of women which enable them to accept with less conflict the dependent role necessary in institutional living.

Background Factors. The background factors of marital status, parental status, occupational level, and educational level were related to the level of adjustment and to intellectual deterioration by means of the chi square technique. The indicator for adjustment was the 17 signs previously mentioned. The amount of intellectual deterioration was subjectively determined on the basis of the entire Rorschach record. None of the eight chi squares obtained differed significantly from chance. In other words, not one of these background factors by itself seems to account for the individual's functioning in later life. These findings are necessarily limited to the group studied. In a group of old people representative of higher educational and occupational levels the results might be very different. It is more likely that a combination of desirable background factors and life experiences is requisite for a high level of adjustment in old age.

Intergroup Variation

Klopfer [4] compared the personality characteristics of 30 people living in this same institution and 20 living at home and found basic similarities in the personality patterns of the two groups. However, a comparison of our data on the institutionalized aged with those of Prados and Fried [6] who administered Rorschachs to 22 normal old people of similar age living in the community tends to support the hypothesis that there are some differences in the personalities of the two populations. The following outstanding differences were noted:

1. The institutional group has lower energy output and less drive than the noninstitutional group (lower R, lower $W\%$).

2. The institutional group shows greater rigidity of the personality than the noninstitutional group (more cases showing $F\% > 50$), and less spontaneity (lower FM, fewer cases showing $FM > M$).

3. The institutional group shows less emotional responsiveness than the noninstitutional group (lower color scores).

It appears, therefore, that the institutional group is assuming some of the personality characteristics of the aged earlier than a noninstitutionalized group of the same age. Nevertheless, differences between the institutionalized and noninstitutionalized are certainly not so marked as the differences between the aged and younger adults.

Summary

It was the purpose of this study to determine by the Rorschach method the major personality characteristics and adjustment level of a group of institutionalized old people. For this purpose 46 oldsters, 24 men and 22 women, between the ages of 61 and 91 were examined. There was a good deal of variation in the experiences of these old people, in their socioeconomic background, and in their education. Some outstanding personality characteristics of this group were noted which differentiate them from a group of younger adults. These are:

1. Low productivity and little drive.
2. Faulty perception of reality and peculiar thought processes.
3. Narrowing of the range of interests.
4. Lack of capacity for independent and creative thinking.
5. Inability to delay the expression of impulses.
6. Decreased emotional responsiveness.
7. Inadequate feelings toward self and generalized feelings of insecurity.
8. Less adequate adjustment, the women showing better adjustment than the men.

Moreover, it was found that:

1. Interindividual variation could not be accounted for in terms of age, or in terms of marital or parental status, educational or occupational level.
2. Differences between this group of institutionalized aged and a group of old people living at home indicated that the institutional group seemed to assume the personality charac-

teristics of the aged earlier than noninstitutionalized group.

Implications

It has become increasingly clear that adjustment at any time in life is in large part a function of the individual's earlier development and his total life experiences. If we want to help oldsters of future generations, we should begin by providing them with the right kind of experiences when they are infants and very young children. For the present generation of oldsters, we need to raise the question of how the aged can most adequately be cared for at least cost to themselves and with greatest benefit to society. In view of our findings, a reevaluation of institutional care is recommended. Recent trends in the care of the aged have been either to help maintain the old person in his own home or in foster homes. Laverty [5] concluded that mental and physical deterioration may be retarded by encouraging normal community living for older people after comparing the adjustment of old people living in an institution with a matched group of old people living at home who could call upon the institution for medical and social aid. There may not, however, be one best solution for the care of the aged, and individual personality differences should always be considered in placement. No matter what the solution, old people must be made to feel that they are still contributing members of a society which considers them assets rather than liabilities.

Received April 10, 1951.

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The Symptoms of Involutional Psychosis

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The present study comprises an evaluation of the descriptive efficacy of two different diagnostic procedures for mental hospital patients. One of the procedures is the conventional diagnosis of the psychiatrists. The other procedure has been described elsewhere [3] and is based upon a scoring of a standard set of symptom rating scales. The rating scales may be scored with respect to nine different symptom clusters in much the same manner as a Bernreuter Personality Inventory is scored. This new procedure has been described as a quantified multiple psychiatric diagnosis to distinguish it from the psychiatrist's conventional diagnosis which is not quantified and may or may not be multiple in nature.

The criterion for evaluating these two descriptive procedures is the pattern of symptomatic similarities and dissimilarities revealed by a factor analysis of the intercorrelations among a sample of patients. The required correlation coefficients between each patient and every other one were determined by the similarity or dissimilarity between the patients revealed by a standard set of 55 symptom rating scales [4, 5, 6]. The set of standard symptom rating scales which provided the basis for correlations between patients is also the set of rating scales upon which the quantified multiple diagnostic procedure is based. This set of symptom rating scales was developed in collaboration with a large number of psychiatrists and may be considered as a good and representative sample of the kinds of symptoms which psychiatrists currently consider to be important in the study of mental hospital patients with functional disorders.

[1]The support of Dr. Mark A. May, Director of the Institute of Human Relations, Yale University, is gratefully acknowledged. The writers also wish to acknowledge the cooperation of the staff of the Connecticut State Hospital. This report is based on a student project in the senior author's class in statistics.

Since other studies have indicated respects in which the quantified multiple diagnostic procedure is descriptively superior to the conventional diagnostic labels of psychiatrists [6], the present investigation was designed in a manner calculated to favor the descriptive value of psychiatrist's diagnosis and to reveal limits in the descriptive value of the quantified multiple diagnostic procedure. The sample of patients was selected with a common diagnosis—involutional psychosis. Although the common primary diagnosis for these patients implies symptomatic homogeneity within the group, there was for each patient a secondary diagnosis so that symptomatic diversity within the group could presumably be designated by the secondary diagnostic label. The final diagnosis was approved by a diagnostic staff conference in which the examining psychiatrist as well as other psychiatrists, psychologists, and social workers participated. The patient group comprised 20 consecutive admissions to the Connecticut State Hospital with this diagnosis.

If important symptomatic differences among the involutional patients are revealed by the factor analysis and if the symptom cluster scores of the quantified multiple diagnostic procedure indicate these differences in a manner superior to the way in which they are indicated by the psychiatrist's diagnosis, a relative superiority could be claimed for the quantified multiple diagnosis. Inasmuch as the quantified multiple diagnostic procedure is based on symptom clusters which were revealed in large samples of quite heterogeneous patients, one would not expect the cluster scores of this diagnostic procedure to reveal numerous differences within a relatively homogeneous diagnostic group. (There is no certainty that the symptom clusters within such a special homogeneous group would be the same as those found among the large heterogeneous groups and it seems plausible that the symptom

clusters for this special group should correspond with the secondary diagnosis.)

The present investigation, incidentally, was expected to be of interest in respects additional to its evaluative purpose. It was hoped that the present analyses would contribute to our knowledge of the involutional psychosis.

The first step in our procedure involved a factor analysis of the intercorrelations among our sample of 20 patients. It was assumed that the major similarities and dissimilarities among these 20 patients would be revealed by the factor analysis of their intercorrelations. The centroid method was applied to the intercorrelations among the patients. Six factors were extracted and rotated orthogonally according to the usual criteria of maximizing the number of zero loadings and minimizing the number of negative loadings. This resulted in the rotated factor matrix shown in Table 1. Table 1 also indicates the sex of each patient and the patient's secondary diagnosis.

From an examination of Table 1, it is apparent that there is no important general factor which indicates a consistent major similarity among all these patients. The absence of evidence for an important general factor suggests that the diagnosis of involutional psychosis is not particularly useful from a purely descriptive standpoint, i.e., it appears to have no consistent descriptive implication from patient to patient. In addition, Table 1 shows that six factors are necessary to account for the intercorrelations among the patients. This finding suggests that the three different secondary diagnoses employed by psychiatrists in describing (or in diagnosing) the present sample are not sufficient to account for important diversities among patients. If the general diagnosis, involutional psychosis, used in combination with three secondary diagnoses, specifically, "paranoid," "melancholia," and "other types," were sufficient to account for the principal symptom patterns manifested by the present group, one would expect to find an important general factor and three broad group factors. Ideally, one would have expected to find in each of the patients a factorial complexity of two so that the intercorrelations among the patients would be due to the degree to which they resembled the total group of patients and the degree to which they resembled the hypothetical subgroup which the secondary diagnosis implies. Such is not the case, however. Nevertheless, it should be noted that all the patients with a secondary diagnosis of paranoid have high loadings for the first factor. Seemingly, the psychiatrist's diagnosis has the greatest descriptive sufficiency for the involutional patients of a paranoid type. An examination of Table 1 reveals considerable diversity among the patients who had a secondary diagnosis of "melancholia" and among the patients who had a secondary diagnosis of "other types."

Table 1

Rotated Factor Loadings for 20 Patients Diagnosed Involutional Psychosis

Patient No.	Sex	Secondary Diagnosis	I	II	III	IV	V	VI	h^2
1	F	Mel.	.022	.452	.563	−.073	.107	.065	.543
2	F	Mel.	−.155	.281	.098	.845	−.005	−.074	.832
3	M	Mel.	.056	.086	.070	.476	.630	.012	.639
4	F	Mel.	−.107	−.063	−.115	.771	.064	−.025	.628
5	M	Mel.	−.089	.053	.554	.038	.224	.505	.624
6	M	Mel.	.388	.612	.328	.102	−.167	.210	.715
7	F	Para.	.602	.024	.000	.074	.572	.139	.715
8	F	Mel.	.039	.337	.502	.070	.066	−.078	.382
9	F	Mel.	−.116	.283	.072	.106	.515	.370	.512
10	F	Mel.	−.194	.576	.144	.261	.189	.247	.555
11	M	Mel.	−.023	.491	.700	−.096	−.007	.156	.765
12	F	Para.	.672	.120	.252	.016	.144	.468	.769
13	F	O.T.	.341	.070	.724	.256	.020	.014	.711
14	F	Para.	.588	−.048	.273	−.136	.082	.470	.669
15	F	Para.	.694	.439	.053	.090	.188	−.052	.723
16	F	O.T.	.305	.089	.270	.334	.170	.482	.501
17	F	O.T.	−.054	.039	.677	.072	−.172	−.108	.509
18	M	Mel.	−.132	.060	.317	.271	.596	−.015	.551
19	F	Para.	.538	.236	−.097	.004	.241	−.115	.426
20	F	Para.	.552	.121	.188	.137	.301	.451	.667
Mean of Squared Factor Loadings*									
Men			.026	.126	.202	.060	.155	.065	
Women			.157	.073	.121	.106	.061	.067	

*Signs of factor loadings were retained in determining the means.

The records of the patients who clustered together to form each of the various factors were examined. There was no evidence that the factors were a result of rater differences. Interestingly enough, however, there is evidence that certain of the patient groupings are more characteristic of one sex than of the other.

Since the psychiatrists' diagnoses failed in several important respects to anticipate the pattern of similarity and dissimilarity revealed

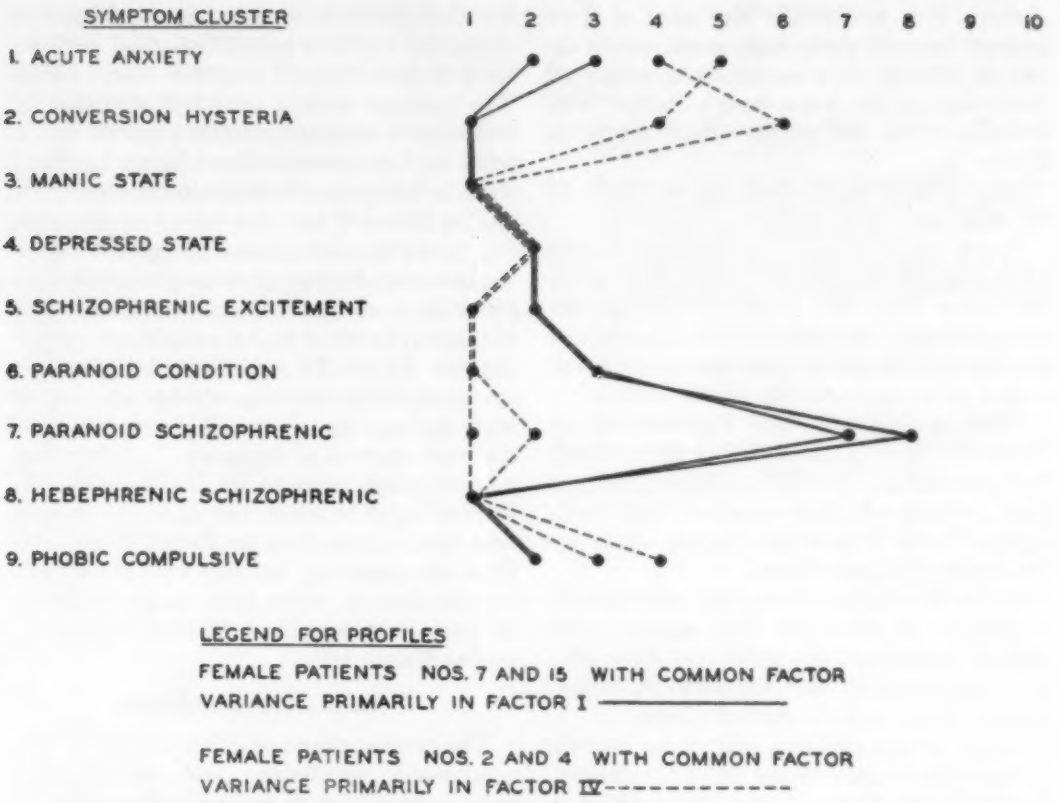
SYMPTOM CLUSTER
1 2 3 4 5 6 7 8 9 10
1. ACUTE ANXIETY
2. CONVERSION HYSTERIA
3. MANIC STATE
4. DEPRESSED STATE
5. SCHIZOPHRENIC EXCITEMENT
6. PARANOID CONDITION
7. PARANOID SCHIZOPHRENIC
8. HEBEPHRENIC SCHIZOPHRENIC
9. PHOBIC COMPULSIVE
LEGEND FOR PROFILES
FEMALE PATIENTS NOS. 7 AND 15 WITH COMMON FACTOR VARIANCE PRIMARILY IN FACTOR I
FEMALE PATIENTS NOS. 2 AND 4 WITH COMMON FACTOR VARIANCE PRIMARILY IN FACTOR IV

Fig. 1. Symptom cluster profiles for four patients, illustrating the profile similarities of patients with similar factorial compositions.

by the analysis of the intercorrelations among the patients, the descriptive efficacy of the multiple quantified diagnostic procedure becomes of particular interest. Accordingly, the nine symptom cluster scores [3] were prepared for each member of the sample and the profiles such as illustrated by Figure 1 were drawn. The patients with similar factorial compositions were found to have similar quantified multiple diagnostic profiles. The nature of this similarity for two groups of patients is shown in Figure 1. The symptom cluster scores may be used to classify the patients in the same way as they are classified on the basis of these factor analyses. With the limitations imposed by the present sample of patients and by the standard set of 55 symptom rating scales, it is concluded that patients with a general diagnosis of involutional psychosis may be better described by the quantified multiple diagnostic procedure than they are described by secondary psychiatric diagnosis. It should be noted that the criteria (the factor analysis) and the quantified multiple psychiatric diagnosis are based on the same data, ie., a standard set of rating scales. On the other hand, it should also be noted that the psychiatrist who proposed the diagnosis was also the psychiatrist who made the ratings and when formulating his diagnosis had available the standard rating scales.

The nature of the similarities and dissimilarities among this group of patients is of interest. Upon scrutiny of the quantified multiple diagnostic profiles of the patients who comprise each factor, it was seen that all of the individuals who have high loadings on any particular factor are also characterized by high scores in certain of the symptom clusters. For example, all the patients who have relatively high loadings for Factor I also have relatively high scores for the paranoid schizophrenic

cluster. It is noteworthy that none of these patients have relatively high scores on the depressed cluster. As a matter of fact, they all have relatively low scores on this cluster. This is indicated by the profiles which appear in Figure 1.

Patients with highest loadings on Factor II are relatively asymptomatic.

Factor III is of particular interest because all of the patients who have high loadings on this factor have high scores on both the depressed cluster and the excited cluster, and may be considered to give the symptomatic picture of an agitated type of depression.

Those patients who have high loadings on Factor IV have relatively high scores on both the hysterical and the anxiety clusters, whereas those patients who have relatively high loadings on Factor V have their highest scores for the anxiety symptom cluster.

Factor VI also has a compound symptomatic significance in the sense that patients with highest loadings on this factor are those who have high scores on both the paranoid schizophrenic cluster and the excited cluster.

There is some evidence that factor pattern is in part determined by the sex of the patient. Specifically on Factor I, the factor which is due to individuals with high scores on the paranoid cluster, it is found that the mean of the squared factor loadings for women is higher than the mean of the squared factor loadings for men. The difference is significant at the 2 per cent level. For Factor V, the anxiety factor, the mean of the squared factor loadings for the men is higher than the mean of the squared factor loadings for the women and this difference is significant at the 2 per cent level. The data of the present sample suggest that among involutional psychotics paranoid symptoms may be more characteristic of the women than of the men, whereas symptoms of anxiety may be more characteristic of men than of women. Although the writers had not predicted this distinction, it is certainly plausible in the light of clinical observation.

The results of the present analysis indicate no descriptive merit in the diagnosis of involutional psychosis even when supplemented with a secondary diagnosis. The patients with a secondary diagnosis of paranoid truly have high scores on the paranoid schizophrenic cluster, but they are without conspicuous evidences of depression and also somewhat varied with respect to other types of symptom cluster scores. The patients with a secondary diagnosis of melancholia seem quite varied from the standpoint of the symptom cluster scores; patients who have high factor loadings on Factor IV and on Factor V have this secondary diagnosis, but the patients who have high factor loadings for these two factors are respectively quite different from each other symptomatically. For example, patients who have high factor loadings on Factor IV are without appreciable symptoms of depression, whereas those with high loadings on Factor V have relatively marked symptoms of depression, i.e., they have relatively high scores on the depression cluster. It should also be noted that all of the patients who have high loadings on Factor II are relatively asymptomatic, but they have the secondary diagnosis of melancholia as do a number of the patients who have relatively high loadings on Factor III.

Summary and Conclusions

The present report describes a study of the symptomatic similarities and dissimilarities among a sample of 20 patients with a diagnosis of involutional psychosis. The 20 patients were intercorrelated on the basis of their ratings on a set of 55 symptom rating scales and the resulting intercorrelations were factorized by Thurstone's centroid method. As a result of this analysis certain conclusions are offered subject to the limitations of the present sample of patients and symptoms:

1. The patients are symptomatically heterogeneous. Some are practically asymptomatic, others are without important symptoms of depression, and still others are characterized by all combinations of important scores on symptom clusters other than depression. This suggests an important descriptive limitation for the diagnosis of involutional psychosis.

2. Instead of there being one important general factor to account for the intercorrelations among the patients, there were instead six group factors. The secondary diagnoses of "paranoid," "melancholia," and "other types" are insufficient to designate the diversities among the patients. Nevertheless, the groups of patients respectively designated by

the factors were found to be relatively homogeneous with respect to certain of the cluster scores which comprise the quantified multiple diagnostic procedure.

3. Patients with the secondary diagnosis of paranoid are all found to have very high scores for the paranoid schizophrenia symptom cluster.

4. For the present sample of patients, it may be claimed that the symptom cluster scores (the quantified multiple diagnoses) provide a relatively efficient and economical means for describing the principal similarities and dissimilarities which may be revealed by the standard set of 55 symptom rating scales.

Received March 30, 1951.

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Group Rorschachs of University Faculties[1]

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The data on which this paper is based have been previously reported in three papers [3, 4, 5]. In those papers faculties in biological, physical, and social sciences were considered separately and compared. In this paper, results on all of these groups have been combined to provide a comparison group for other workers.[2]

The subjects are members of various university faculties, although not all of the universities are represented in each of the major subgroups, and there are also nine subjects from the U. S. National Museum. The universities are California, California Institute of Technology, Chicago, Columbia, Cornell, Harvard, Iowa, Johns Hopkins, Maryland, Massachusetts Institute of Technology, Michigan, Ohio, Stanford, and Wisconsin. There are 382 subjects in all, from all faculty ranks from instructor to full professor. They include, among the biologists, agriculturalists, anatomists, bacteriologists, biochemists, botanists, geneticists, physiologists, and zoologists; among the physical scientists, experimental and theoretical physicists and physical chemists; and among the social scientists, all varieties of anthropologists and psychologists. They may be considered as representative of academic scientists in these fields, but probably as being in the upper part of a distribution for competence. The age range is 23 to 73 years.

The Harrower booklets were used, and the technique of administration was essentially that reported by her [1]. The exposure time

[1]From a study financed by a grant from the National Institute of Mental Health of the United States Public Health Service.

[2]I am greatly indebted to Dr. Helen Walker for advice on the statistical handling of these data, and their interpretation. The calculations were done by Mr. Lassar Gotkin.

Table 1

Percentiles for Rorschach Determinants

(N = 382)

Percentile	*R*	*W*	*D*	*d*	*Dr*	*S*	*M*	*FM*	*Fm,m*	*Fk,k*	*K*
95	68.0	21.0	31.0	10.3	13.5	6.5	12.0	8.6	5.2	2.2	2.1
90	58.0	18.8	27.3	8.2	11.4	4.1	9.4	7.0	3.9	1.1	1.5
75	45.1	13.8	20.5	4.7	6.8	1.9	6.0	4.7	2.2	0.7	0.9
50	32.1	10.2	14.4	1.9	3.0	0.7	3.4	3.1	1.0	0	0
25	23.0	7.7	9.6	0	1.2	0	1.7	1.7	0	0	0
10	17.7	5.8	5.6	0	0	0	0.6	0.8	0	0	0
5	15.6	4.8	3.4	0	0	0	0	0.4	0	0	0
Mean	35.8	11.3	15.3	3.01	4.48	1.43	4.26	3.57	1.50	0.42	0.49

Percentile	*FK*	*F*	*Fc*	*cF*	*FC'C'*	*FC*	*CF*	*C*	*W%*	*F%*	*A%*	*ITS*
95	2.7	32.5	10.0	3.5	3.5	8.2	5.3	1.1	74.62	69.62	55.00	18.39
90	2.0	27.6	7.4	2.4	2.5	6.5	3.3	0	62.94	63.77	49.19	16.47
75	1.1	20.1	4.9	1.2	1.3	4.2	2.8	0	45.43	52.66	42.96	13.00
50	0	12.3	3.1	0	0	2.3	1.4	0	32.64	38.12	35.50	9.59
25	0	7.0	1.5	0	0	0.9	0	0	21.75	25.61	28.56	6.72
10	0	4.1	0.7	0	0	0	0	0	15.83	16.65	23.34	4.54
5	0	2.5	0	0	0	0	0	0	12.04	12.11	20.92	3.26
Mean	0.67	14.66	3.67	0.77	0.87	2.89	1.79	0.11	36.3	39.5	36.43	10.1

was 3 minutes per card. After all 10 cards had been shown, they were run through again, and each was exposed as long as was needed to permit the subjects to mark the locations on the blank, and enter other inquiry data.

There is no conclusive study on comparability of the group and the individual Rorschach. In my own experience, while not precisely interchangeable, the results are very similar. While the group Rorschach is not, as a rule, quite so useful clinically as an individually administered test, nevertheless it can be so used and the decrement is small compared to the saving in time. It would seem, also, that the fact brought out earlier in the course of this study that differences between occupational groups are the same whichever way the Rorschach is administered is strong presumptive evidence of the essential equivalence of the two procedures.

There are only 35 women in the group. In the earlier reports, sex comparisons were made, but no significant differences were found, so in this group the sexes have not been separated.

Data on Determinants and Content

At the suggestion of Dr. Lee Cronbach, the 5, 10, 25, 50, 75, 90, and 95 percentile points for the usual Rorschach determinants (following Klopfer's scoring) and for *W%, F%, A%* and Munroe's Inspection Technique Score (*ITS*) were computed and are given in Table 1. Most of the distributions are very skewed, but only that for *Fk* is a Poisson distribution.

The same percentile points for the commonest content categories are given in Table 2.

Table 2

Percentiles for Major Content Categories
(N = 382)

Percentile	P	O	H	Hd	A	Ad	AObj.	Obj.	At	Sex
95	8.6	19.0	11.5	8.1	18.0	8.5	3.0	9.7	7.5	2.5
90	8.1	15.1	9.1	5.9	15.9	6.9	2.4	7.4	6.0	1.9
75	7.0	9.3	6.2	3.2	12.4	4.2	1.8	4.9	4.6	0.6
50	5.7	5.1	3.3	1.4	9.3	1.9	1.1	2.9	1.8	0
25	4.5	2.1	1.4	0	6.7	0.5	0.6	1.1	0.6	0
10	3.2	0.6	0.5	0	4.8	0	0	0	0	0
5	2.3	0	0	0	3.8	0	0	0	0	0
Mean	5.64	6.82	4.17	2.31	9.90	2.77	1.23	3.53	2.53	0.44

Munroe Inspection Technique Data

All of these records were scored by Munroe's Inspection Technique [2]. Percentile points for total score are given in Table 1. A tabulation of items checked is given in Table 3, from which it appears that those most often checked are color and shading shock and relatively excessive use of unusual details. *W%* is more often high than low; *M* more often low than high.

Criteria for entering checks on the check list change with the total number of responses

Table 3

Munroe Inspection Technique Summary
(*N* = 382)

Item	N	%
Refusal	7	2
W%: +	90	24
—	32	8
BVE	53	14
Dd%: +	186	49
S: +	90	24
Suc: I or II	120	31
P: —	42	11
O: +	45	12
BV	25	7
At, Sex: +	69	18
Range: +	26	7
— or t	79	21
F%: +	112	29
—	29	8
BV, VV, B	97	25
E	12	3
Shading Shock	207	55
FK, Fc:—	49	13
c:+	63	16
C′:+	40	10
K,k:+	60	16
M: +	50	13
—	136	36
r, b, lil, etc.	105	27
FM: +	63	16
—	67	18
m: +	78	20
Tot. movement:+	24	6
—	30	8
Color shock	268	70
FC: —	137	36
B	9	2
CF: +	64	17
—	106	28
C: +	16	4
Total color:+	34	9
—	103	27
Color: movement:+	85	22
—	112	29

given by the individual subject. That this adjustment is adequate on the whole is clear from the correlation between *R* and *ITS* which is + .043. (Very low, or very high total numbers of responses may require further adjustment, but these are rarely encountered in practice and can be handled individually.) This obviates a major difficulty in comparing records which vary largely in total numbers of responses.

The Inspection Technique Score is not affected by age, in this group. The correlation is + .059.

Influence of Age

In attempting to assay the effect of age on Rorschach determinants the immediate difficulty arises that most of the determinants do not distribute normally so that the usual correlational techniques do not apply. They have been used where appropriate. The other relations, however, have been studied by analysis of variance. Some measure applicable to both techniques is needed in order to make direct comparisons. The closeness of the relation cannot be directly compared—levels of *F* corresponding to given levels of *r* are not known —but it is possible to compare the degree of change in one variable associated with change in another by a regression coefficient. For the analysis of variance, this can only be computed with age or *R* as the dependent variable (because the distributions of age and *R* are approximately normal within the classes but the other distributions are not).

Table 4

Age and Rorschach Determinants*

(N = 382)

	Correlations with age (*r*)	$b_{age.x}$
R	−.007	
W	+.148	+.295
W%	+.138	+.076
D	−.096	
Dr	−.061	
M	−.214	−.629
FM	−.144	−.573
F	+.069	
F%	+.186	+.108
Fc	−.036	
FC	−.038	
Analysis of variance (*F*)		
K	2.287	
k	.765	
cF	4.477	+.195

*Determinants not appearing in the Table (d, S, m, Fk, C′ and CF) were set up for analysis of variance. The column means did not differ sufficiently to warrant further study, i.e., there is no relationship between age and any of these.

The data are given in Table 4. For this group, a correlation of .10 is significant at the 5 per cent level. Hence, the correlations for age with *W*, *W%*, *F%*, *M*, and *FM* are all significant, although very low. Regression coefficients were computed only for those pairs showing a significant relation, however slight. It should be emphasized that what is shown by the regression coefficients is *not* the closeness of the relation but the slope of the line of means, i.e., the *amount* of change in age associated with changes in the determinant. These coefficients are all low. Only for *cF* did the analysis of variance appear to show a significant relation. (*F* of 3.83 is significant at the 1 per cent level.) Mean ages for 0, 1, 2, and over 2 responses scored *cF* are: 40.96, 39.07, 46.29, and 39.53, hence the relationship is clearly not a regular one, and the significant *F* may well be due to chance.

It would seem then, that the effect of age, while it should not be totally disregarded, may for most of the Rorschach determinants be considered negligible. The slight drop in use of *M* is probably the most important in this respect.

Relation between Total Number of Responses and Other Determinants

This is a major problem in all Rorschach research, when it is desired to compare two groups of persons, or even two subjects, whose total numbers of responses differ markedly. An attempt can be made, in administering the test (if it is known in advance that such comparisons will be wanted) to control the total number of responses. It is quite easy to limit them to not more than any desired number, or responses beyond that can just be disregarded for research purposes, although the total productivity and other aspects are important in themselves. But it is difficult to ensure a minimum number of responses to each card, and in this case, even if the attempt is suc-

cessful in that the subject does produce the requested number, some serious distortion may result in the Rorschach picture. The forcing, in itself, alters the Rorschach situation, and may lead, e.g., to production of poor form or vague *W* responses which in sum will not accurately represent the subject's functioning control. Hence the sort of technique devised by Munroe seems theoretically more desirable.

As has been noted, the *ITS,* or total number of checks on Munroe's check list is not related to total number of responses, but there may be some question about the adjustment for variation in response total in the case of individual checks. Munroe's adjustments were arrived at clinically, and it is certainly my impression that few alterations would be necessary, but it is highly desirable that this be checked statistically, if possible. It is felt that the data offered in the following tables, particularly if combined with similar data from other normal groups of different social and intellectual levels, would provide a solid statistical basis for investigation of the present allowances, and where necessary, for setting up a more generally applicable scale.

The data have been handled as they were in the preceding section, and the results are presented in Tables 5 and 6.

There is a significant relation between *R* and every variable studied whether by *r* or *F*. (The correlations would be only slightly changed if the variation due to age were partialled out, since the correlation between *R* and age is .007.) As can be seen from the sequence of means given in Table 6, only for *S* and *m* is there even a slight break in the regularity of the increase in mean *R* with increase in each determinant. Apparently one determinant does not regularly increase at the expense of any other.

The regression coefficients for all of these relations are directly comparable and indicate the relative rapidity with which *R* changes with the changes in the particular determinant. Only for *F%* is the slope so slight that the change can practically be disregarded. For determinants showing a close relation to *R*, and a high regression coefficient, some sliding scale, such as that used by Munroe, is essential for estimating the significance of the frequency with which the determinant is used. In Table 6, for example, knowing that *d* and *R* are significantly related, one would deduce that for protocols of 35 to 40 *R*, a *d* frequency of 3 or 4 would have the same significance as one of 6 or 7 for an *R* of 47 to 55.

Table 5

Relations Between Separate Rorschach Determinants and Total Number of Responses (*R*)

	Correlations with *R* (*r*)	$b_{R.x}$
W	+.331	1.109
W%	—.548	—.507
D	+.875	1.821
Dr	+.744	2.895
M	+.438	2.121
FM	+.396	2.648
F	+.797	1.315
F%	+.166	.161
Fc	+.479	2.855
FC	+.532	3.402
Analysis of Variance		
	F	$b_{R.x}$
d	64.39	3.228
S	30.39	4.539
m	20.62	4.785
k	4.69	4.644
K	12.32	6.834
FK	18.51	6.013
cF	10.92	4.159
C'	22.07	4.617
CF	8.81	2.750

Table 6

Mean *R* for Various Numbers of Determinants (From A. V. Tables)

	0	1	2	3 (or > 2)	4	5 (or > 4)	6 and 7	8 to 10	> 10
d	22.8	28.9	33.3	36.3	39.0	46.4	48.8	61.9	67.2
S	28.1	35.6	38.9	48.4	43.5	58.3			
m	29.2	33.3	39.8	43.8	41.9	58.9			
k	33.9	39.1	43.2	44.4					
K	33.1	38.2	42.9	68.0					
FK	31.6	38.8	41.0	55.5					
cF	33.0	35.3	44.7	47.4					
C'	31.7	37.3	38.4	54.6					
CF	31.0	36.3	33.6	34.0	46.5	48.2			

Other Relations

A general table of intercorrelations, or of analyses of variances for all possible pairs of these variables has not been prepared. Two other correlations have been run, however, for

their particular interest for Rorschach theory. The correlation between *M* and *FC* in this group is + .392. That between *M* and *Fc* is + .204.

Received April 30, 1951.

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The Relationship between Factors on the Wechsler-Bellevue and Rorschach Having Common Psychological Rationale

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In clinical practice, the meaningful application of psychological tests to subjects does not conclude with the procurement of responses or their scoring. If psychological tests are to be meaningfully utilized, the psychologist must go beyond the individual's responses and proceed to their meaning within the dynamic structure of the subject's personality. Unless the psychologist can thus interpret the test results, he remains a technician who sticks to isolated scores and perhaps interprets them "with the help of texts used as dreambooks" [3, p. 245] rather than a psychologist whose function it is to contribute meaning to an individual's behavior. As Mayman has indicated, "Even if we should observe that specific psychiatric disorders affect the ability to pass specific items, these observations—to be diagnostically useful—must still be interpreted in terms of impairment of specific psychological functions" [2, p. 550].

Interpretation of test findings, however, depends upon the development of test rationale which defines the psychological processes underlying test performance. The importance of test rationale in clinical psychology has been stressed by Rapaport who stated: ". . . without such a rationale the tests and test results must remain meaningless to the psychiatrist, and a matter of automatic procedure and mechanical comparison to the clinical psychologist" [4, p. 5].

While the rationale for many clinical instruments has been slowly accumulating, this has been more in the nature of assumptions rather than experimentally demonstrated facts. While Wechsler [7] offers some rationale for the subtests of his intelligence scale, these are more incidental comments than a systematic development of test rationale in terms of a psychological theory which "deals with the rationale of how, by what processes, the organizing principles of the personality and their pathological alterations are carried over into test performance" [3, p. 248]. The rationale for the Rorschach test has been somewhat more adequately developed, with Rorschach himself serving as the most important impetus in developing its rationale [6]. With both tests, however, the validity of the rationale that has been offered has not been put, for the most part, to rigorous experimental test.

More recently, Reichard and Schafer [5] and especially Rapaport *et al.* [4] have focused sharply on the absence of adequate test rationale. The latter's work represents the most intensive and extensive attempts at formulation of test rationale for the most important psychological tests now in clinical usage. However, Rapaport stresses the fact that his test rationale is offered as tentative assumptions to be tested, rather than as scientifically established facts, since, as he states, he is treading "on disputed and at times uncharted territory" [5, p. v].

While this study is broadly concerned with the validity of test rationale, its specific purpose is to investigate the degree of relationship between factors in the Wechsler-Bellevue and Rorschach which have common rationale. The specific hypothesis underlying this study is that these factors should yield statistically significant relationships. "Common rationale" in this study refers to *similar* rather than *identical* psychological processes underlying the test factors being studied.

Subjects

The Wechsler-Bellevue and Rorschach pro-

tocols of fifty mental hospital patients were utilized in this study. The test results were considered representative of the patient's current functioning. In order to be able to handle Rorschach factors statistically, only those Rorschach records were used which contained at least fifteen responses.

The subjects ranged in age from 21 years to 38 years, with a mean of 29. There were 24 men and 26 women in the group.

The subjects were not controlled for intelligence level since it was felt that this factor should be equally, rather than differentially, operative in both tests for a given subject. The subjects' total IQ scores on the Wechsler-Bellevue ranged from 64 to 127, with a mean IQ of 100.1. Table 1 gives the distribution of estimates of optimal or premorbid intelligence.

Table 1
Estimates of Optimal Intelligence

Classification	Number
Borderline	1
Dull normal	1
Average	17
Bright normal	15
Superior	11
Very superior	5
	50

No attempt was made to control the group in terms of diagnostic classification since it was also felt that no differential effects on the two tests for any given subject would result from a disease process. The diagnostic classifications are listed in Table 2.

Table 2
Diagnostic Classifications of Subjects

Diagnosis	No.
Schizophrenia	
Paranoid	10
Catatonic	2
Hebephrenic	1
Simple	1
Other Types	4
Manic-Depressive psychosis	
Manic	7
Depressed	1
Psychoneurosis	
Reactive depression	2
Obsessive-Compulsive	1
Psychasthenia	1
Mixed	5
Without psychosis, psychopathic personality	7
Alcoholic psychosis	
Delirium tremens	2
Chronic hallucinosis	2
Acute hallucinosis	1
Miscellaneous	
Paranoid condition	1
Primary behavior disorder	1
Without psychosis, Alcoholism	1
	50

Procedure

Forty-five predictions were made relative to Wechsler-Bellevue and Rorschach factors presumed to have a common psychological rationale (Table 3).

The *comprehension* subtest of the Wechsler-Bellevue was predicted to have a relationship with *F+%, CF+C, FC−+CF−*, and *P* on the Rorschach. With comprehension currently presumed to be a measure of judgment, it was predicted that judgment would be related to *F+%* on the Rorschach which is presumed to measure the adequacy of reality perceptions. Comprehension was also predicted to be related to *CF+C* and *FC−+CF−* because it was felt that the pattern of emotional response should be related to the adequacy of judgment. Thus, where a subject showed impulsivity in his emotional reactivity or an inability to cope with his emotions resulting in a breakdown of intellectual control, it was felt that this would reveal itself in defective judgment. Lastly, comprehension was predicted to be related to *P* because both were presumed to involve the ability to utilize accepted modes of thinking. Deviation in thinking as reflected by an inability to see *P* on the Rorschach should similarly be reflected in an impaired judgment on the comprehension test.

The *information* subtest of the Wechsler-Bellevue was predicted to be related to *R*, the number of content categories, and *A%*. All of these relationships were predicted on the presumption that range and flexibility of interests are being measured by both the information test and the three Rorschach factors noted. While the relationship with *R* and the number of content categories was presumed to be positive, the relationship between information and *A%* was predicted to be negative inasmuch as the higher the *A%*, which is presumed to measure stereotypy, the lower should be information as a measure of varied interests.

Similarities on the Wechsler-Bellevue was predicted to be related to *W%, D%*, and *M* on the Rorschach. It was felt that all of these measures were related to conceptualized thinking and the

Table 3

Wechsler-Bellevue and Rorschach Factors Presumed to Have Common Rationale

Wechsler-Bellevue Factors	Related Rorschach Factors	Direction of Expected Relationship
Comprehension (Weighted score)	1. $F+\%$	+
	2. Refined $F+\%$ (form dominant responses only)*	+
	3. Refined $F+\%$ (all form responses)†	+
	4. $\frac{CF+C}{R}\%$	—
	5. $\frac{CF+C}{\Sigma C}\%$	—
	6. $\frac{FC-+CF-}{R}\%$	—
	7. $\frac{FC-+CF-}{\Sigma FC+CF}\%$	—
	8. No. of P	+
Information (Weighted score)	1. No. of R	+
	2. No. of content categories	+
	3. $A\%$	—
Similarities (Weighted score)	1. $W\%$	+
	2. $D\%$	—
	3. No. of M	+
Similarities (No. of "1" scores)	1. $W\%$	—
	2. $D\%$	+
	3. No. of M	—
Similarities (No. of "2" scores)	1. $W\%$	+
	2. $D\%$	—
	3. No. of M	+
Digit Span (Weighted score)	1. $Dd\%$	—
	2. F%	—
	3. $\frac{\text{Shading responses}}{R}\%$	—
	4. $H+Hd\%$	+
	5. $A\%$	—
	6. $\frac{At+\text{x-ray responses}}{R}\%$	—

Table 3 — (Continued)

Wechsler-Bellevue Factors	Related Rorschach Factors	Direction of Expected Relationship
Arithmetic (Weighted score)	1. $Dd\%$	—
	2. $F\%$	—
	3. $\frac{\text{Shading responses}}{R}\%$	—
	4. $H+Hd\%$	+
	5. $A\%$	—
	6. $\frac{At+\text{x-ray responses}}{R}\%$	—
Picture Arrangement (Weighted score)	1. $W\%$	+
	2. No. of FC	+
	3. $H\%$	+
	4. $H+Hd\%$	+
Picture Completion (Weighted score)	1. $D\%$	+
	2. $Dd\%$	+
	3. $F+\%$	+
	4. Refined $F+\%$ (form dominant responses only)*	+
	5. Refined $F+\%$ (all form responses)†	+
	6. No. of P	+
Block Design (Weighted score)	1. $W\%$	+
	2. $D\%$	—
	3. No. of M	+

*Refined F+% (form dominant responses only) refers to a refined measure of F+% which is based on all responses in which form is dominant, e.g., FC, Fc, Fk, etc., rather than pure form responses only.

†Refined F+% (all form responses) is a refined measure of F+% which is based on all responses in which form is present, e.g., CF, cF, C'F, etc.

abstract attitude. In addition, it was felt that similarities and M were a measure of creative thinking. The relationship between similarities and $W\%$ and M was predicted to be positive whereas that between similarities and $D\%$ was predicted to be negative.

In order to refine further the similarities subtest, the number of items on the similarities subtest which received a score of "1" and the number of items which received a score of "2" were predicted to be related to $W\%$, $D\%$, and M as above. The expected relationships in the case of the "1" responses were opposite to those of the "2" responses.

The *digit span* subtest was predicted to be related to *Dd%*, *F%*, shading responses, *H%*, *A%*, anatomy and x-ray responses. With the belief that the digit span subtest is an indicator of anxiety, it was felt that the Rorschach factors indicated should be related to it in that the former were also presumed to measure the presence or absence of anxiety. Thus, it was felt that *H%* should be positively related to digit span in that the ability to operate successfully in human relationships would reflect a low anxiety level. On the other hand, *F%* as a measure of intellectual constriction, *A%* as a measure of stereotypy, anatomy, x-ray, and shading responses as direct measures of anxiety and *Dd%* as a mechanism for coping with anxiety should all correlate negatively with digit span.

Similarly, it was predicted that the *arithmetic* subtest on the Wechsler-Bellevue would be related to the same factors as digit span and in the same direction inasmuch as this subtest has been assumed to be sensitive to disturbances resulting from anxiety.

The *picture arrangement* subtest of the Wechsler-Bellevue was predicted to be related to *W%*, *FC*, and *H%*. The relationship between picture arrangement and *W%* was predicated on the belief that organizational ability played a role in both of these factors. The relationship between picture arrangement and *H%* was based on the presumed ability of the picture arrangement subtest to measure social awareness and social contact. This was also true in the predicted relationship between picture arrangement and *FC*, in that it was felt that the individual with a good capacity for social relationships would be able to score high on picture arrangement and to give *FC* responses as a measure of his capacity for warmth and empathy.

The *picture completion* subtest was predicted to be related to *D%*, *Dd%*, *F+%*, and *P*. The relationship between picture completion and *F+%* was based on the presumed capacity of these two factors to measure reality testing. The predicted positive relationship of picture completion with *D%* and *Dd%* was based on the presumption that these factors measured the ability of the individual to attend to details. The relationship between picture completion and *P* was based on the presumed

Table 4

Correlations between Wechsler-Bellevue and Rorschach Factors

Rorschach Factors	Wechsler-Bellevue Factors									
	Comprehension	Information	Similarities	Similarities "1"	Similarities "2"	Digit Span	Arithmetic	Picture Arrangement	Picture Completion	Block Design
1. No. of *R*	.11	.27*	.13	—.02	.13	.10	.21	.05	.17	.20
2. *W%*	.04	—.11	.08*	—.32*	.05*	—.05	—.10	—.19*	—.16	—.12*
3. *D%*	.11	—.05	—.02*	.17*	—.08*	—.09	—.13	.15	.12*	.13*
4. *Dd%*	.07	.21	.14	.27	.02	.19*	.30*	.10	.09*	.01
5. *F+%*	.08*	.01	.27	.11	.23	—.12	.09	.24	.17*	.13
6. Ref. *F+%* (form dom.)	.17*	.05	.36	.14	.30	—.10	.12	.20	.22*	.23
7. Ref. *F+%* (all form)	.21*	.05	.36	.16	.29	—.07	.14	.19	.22*	.27
8. *F%*	.11	—.17	—.27	.09	—.31	.04	—.05	.02	—.13	—.17
9. No. of *M*	.08	.33	.24*	—.01*	.25*	.09	.15	—.04	.22	.03*
10. No. of *FC*	.17	.08	.28	.04	.25	—.02	—.01	.10*	.21	.24
11. *CF+C%*	.07*	.18	.09	—.28	.19	—.17	—.19	—.19	—.04	—.02
12. *CF+C/Σ C* (%)	.05*	.01	.02	—.29	.13	—.14	—.17	—.24	—.15	—.05
13. *FC—+CF—%*	—.05*	.07	.05	—.12	.11	—.05	—.19	—.11	—.07	—.35
14. *FC—+CF—/ Σ FC+CF* (%)	.03*	.04	—.11	—.28	—.02	—.07	—.28	—.10	—.08	—.37
15. % shading resp.	.02	.21	.10	—.03	.12	—.11*	.12*	—.09	.00	.02
16. *A%*	.04	—.09*	—.03	.07	—.03	—.05*	.00*	.17	.12	.10
17. *H%*	—.03	.15	.12	—.03	.13	.00	.12	.06*	.11	.15
18. *H+Hd%*	—.06	.20	.10	.14	.04	.01*	.17*	.12*	.15	.08
19. *At*+x-ray %	—.10	.13	—.07	—.06	—.04	.12	.01	.12	.03	—.21
20. No. of content categories	.21	.28*	.18	—.09	.20	.03	.16	.02	.14	.15
21. No. of *P*	.01*	.05	.09	—.16	.17	.11	.10	.29	.27*	.01

*Correlations for related factors that were predicted.
r = .35 (.01 level of confidence)
r = .27 (.05 level of confidence)
r = .24 (.10 level of confidence)

ability of these factors to measure appreciation of reality and conformance with accepted modes of thinking.

The *block design* subtest, as with similarities, was predicted to be related to *W%*, *D%*, and *M*. The rationale here was the same as described above for similarities.

The forty-five predicted relationships were studied by correlating each pair of factors. In order to determine whether there were relationships between Wechsler-Bellevue and Rorschach factors that were not predicted, each Wechsler-Bellevue factor was also correlated with all of the other Rorschach factors. If a correlation was found to be significantly greater than zero, it was considered to be a reliable correlation indicating that there was some element of rationale that was common to both factors.

Results

The findings of the present study are presented in Table 4. For purposes of clarity, they will be described here first from the point of view of Wechsler-Bellevue factors and then from the point of view of Rorschach factors.

Wechsler-Bellevue Factors

1. *Comprehension.* The eight Rorschach factors presumed to be related in rationale to the comprehension subtest yield correlations which are not significantly different from zero. Furthermore, there is no significant relationship between comprehension and any other Rorschach factors.

2. *Information.* Of the three Rorschach factors which were predicted to be related to the information subtest, two revealed a statistically significant degree of relationship. The relationships between information and *R* and between information and number of content categories are significant at the .05 level of confidence. The percentage of animal responses was found to be not related to information. *M* is significantly related to information at the .05 level of confidence. This latter relationship was not predicted. All of these relationships are positive.

3. *Similarities.* The predicted relationship between *M* and similarities approaches statistical significance at the .10 level of confidence. The expected relationship between location (*W%* and *D%*) and similarities was not substantiated. Of the nonpredicted relationships, the following are significant: *F+%* (.01–.05 level of confidence), *FC* (.05 level of confidence), and *F%* (.05 level of confidence). The latter is negatively related.

4. *Similarities — "1" responses.* The predicted relationship between *W%* and the number of similarities "1" responses is at the .05 level of confidence and in the expected negative direction. However, there is no significant relationship with *D%* and *M*. Of the relationships for which no common rationale was predicted, the following Rorschach factors show a statistically significant relationship with the number of similarities "1" responses: *Dd%*, *CF + C*, and *FC − + CF−* (all at the .05 level of confidence). The latter two relationships are in the negative direction.

5. *Similarities*—"2" responses. Of the three predicted relationships, only *M* approaches significance (.10 level of confidence). Neither *W%* or *D%* was found to be related to the number of "2" responses on the similarities subtest. Of the correlations for which a relationship was not predicted, the following are found to be significant or to approach significance: *F+%* (.05 level of confidence), *FC* (.10 level of confidence), and *F%* (.05 level of confidence). The latter shows a negative relationship.

6. *Digit span.* No Rorschach factors, predicted or otherwise, were found to be related to digit span.

7. *Arithmetic.* Of the group of six Rorschach factors for which relationships were predicted with arithmetic, only one, *Dd%*, is statistically significant (.05 level of confidence). However, the positive direction of this relationship was not predicted. Of relationships not predicted, *FC— + CF—* yields a statistically significant negative correlation (.05 level of confidence).

8. *Picture arrangement.* None of the correlations which were predicted to reveal a relationship between this subtest and *W%*, *FC*, and *H%* is statistically significant. The significant relationship between picture arrangement and *P* was not predicted (.05 level of confidence). In addition, the relationships of picture arrangement with *F+%* and *CF + C* approach significance at the .10 level of confi-

dence. The latter, however, is negatively related.

9. *Picture completion.* Except for *P*, none of the other Rorschach factors that were predicted to have a relationship with picture completion yield significant correlations, although the correlations with the two refined measures of *F+%* approach the .10 level of confidence. There are no statistically significant relationships for which common rationale was not originally hypothesized.

10. *Block design.* The three Rorschach factors which were predicted to be related to the block design test do not show a significant relationship. Several Rorschach factors for which no relationship with block design was predicted yield significant correlations. One of the refined measures of *F+%* shows a relationship at the .05 level of confidence. In addition, *FC− + CF−* is negatively related at the .01 level and *FC* approaches significance at the .10 level of confidence.

Rorschach Factors

1. *Number of responses.* The number of responses on the Rorschach is positively related to one Wechsler-Bellevue factor, i.e., information.

2. *Location categories. D%* is not related to any of the Wechsler-Bellevue factors. *W%* is negatively related to similarities "1" responses while *Dd%* is positively related to this same factor. *Dd%* is also positively related to arithmetic.

3. *Form responses.* Statistically significant correlations exist between *F+%* and both block design and similarities. The correlation of *F+%* with picture arrangement approaches significance. *F%* yields significant negative correlation with similarities.

4. *Movement responses.* The correlation of *M* with information is significant and the correlation with similarities approaches significance.

5. *Color responses.* The correlation of *FC* with similarities is significant and the correlation with block designs approaches significance. *CF + C* are negatively correlated with similarities "1" responses and the correlation with picture arrangement approaches statistical significance. *FC− + CF−* are negatively correlated with similarities "1" responses, block design, and arithmetic.

6. *Shading responses.* There are no significant relationships between shading responses and any Wechsler-Bellevue factors.

7. *Content categories.* The number of content categories is positively related to information. However, *A%, H%,* anatomy and x-ray responses do not show any relationship to Wechsler-Bellevue factors.

8. *Popular responses.* The number of popular responses is positively related to picture arrangement and picture completion.

Discussion

The results of this study reveal clearly that very few relationships between factors on the Wechsler-Bellevue and the Rorschach having a common rationale are significant when put to experimental test. While the number of positive findings are significantly greater than could have occurred by chance, their absolute number is small. Thus, of the 45 relationships predicted, only four yielded statistically significant correlations while two correlations show a trend toward significance. A cross-validation study on a new population should determine whether the unpredicted findings are a function of the particular subjects rather than of the tests themselves.

Table 4 reveals that all the correlations were low. It was expected that the correlations would not be high since it was assumed that the two factors in a presumed relationship were measuring *similar,* but not *identical,* psychological processes. High correlations would have led to the clinically invalid conclusion that the Wechsler-Bellevue and the Rorschach measure the identical behavior phenomena with the consequent implication that the psychologist could therefore study his subject as fully with either instrument as with both. The basic difference between the Wechsler-Bellevue and the Rorschach in terms of the degree of structure of the two instruments and their consequent ability to probe in depth is obvious. Yet, if the unity of personality has meaning, factors on both tests which are related because they share a common rationale should demonstrate a relationship that is significant while at the same time being understandably low.

The study is testimony to the problem in

present-day clinical psychology with regard to test rationale. The study does not negate the importance of current test rationale for the clinical psychologist who is faced with the problem of bridging "the gap between the traditionally lifeless numerical-test results and the living clinical dynamics" [4, p. 11]. The emphasis of this report is rather on the need to consider current test rationale as hypotheses which require experimental test.

Summary

The purpose of this investigation was to determine the degree of relationship between factors in the Wechsler-Bellevue and Rorschach which have common rationale. The subjects of the study were fifty mental hospital patients. Forty-five predictions were made and these predictions were tested by a correlational analysis. Only four predictions were found to be statistically significant, and two others approach significance. A fairly large number of relationships were found that were not predicted.

Received May 1, 1951.

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Relationships Between Rorschach Scores and Adjustment Level[1]

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Many hypotheses are presented in the current literature concerning the use of specific Rorschach scores and combinations of scores to predict the social effectiveness and adjustment level of patients. For example, Rorschach authorities [3, 5, 11, 14, 15, 23, 26] have suggested that refusal to respond to the Rorschach cards (Rejection) often indicates inefficiency and maladjustment. Whether or not the combination of Rorschach scores proposed by Muench [21] is useful for predicting external criteria of adjustment is another hypothesis which has been discussed at length recently [6, 7, 10, 21]. In the present research report, the authors describe their attempt to test several such hypotheses against a criterion of adjustment level external to the Rorschach test.

Pooled judgments of adjustment level made by the junior authors and based upon interview data constituted the criterion. Rorschach test and interview data were obtained during the treatment of each of 31 male subjects. Retest and follow-up interview data were obtained from these subjects 15 months or more after the first test, after treatment had been concluded or discontinued. Hypotheses concerning the relationships between Rorschach scores and adjustment level were tested using these data.

[1]The authors wish to thank Dr. Mervin Patterson, Chief Psychologist at the Columbus VA Mental Hygiene Clinic, and Dr. Boyd R. McCandless and Dr. Julian B. Rotter, VA Psychological Consultants and staff members of the Psychological Clinic at the Ohio State University, for their assistance and suggestions. This paper was reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinions or policy of the Veterans Administration.

Procedures

The subjects of this investigation were selected from the former male patients of the Columbus VA Mental Hygiene Clinic who (*a*) had not visited the Clinic for at least 6 months, (*b*) lived within 150 miles of the Clinic, and (*c*) had taken only one Rorschach test, and that test during the period of treatment at the Clinic. Because the life of the Clinic had been approximately 18 months at the time of this study, there were only 52 subjects who satisfied these criteria. These 52 subjects were requested by letter to return to the Clinic "for an informal examination and interview." They were told: "We are interested in how you have been getting along since we last saw you, and how things are going for you now, so that we may learn to what extent our services have been helpful and how they could be improved."

Thirty-one of the 52 subjects returned to the Clinic and took the Rorschach retest. One other subject returned to the Clinic, but he refused to take the retest. Fifteen of the subjects who did not return to the Clinic had moved to another part of the country. The other 5 subjects who did not return to the Clinic did not respond to the original letter nor to a second letter requesting that they return. Possible reasons for their failure to respond are (*a*) that improvement made further interest in the Clinic services unimportant, or (*b*) that lack of improvement resulted in blame and rejection of the Clinic. Either of these possibilities would narrow the range of data available for study and thus weaken the relationships to be studied in the data, but would not seem on logical grounds to introduce spurious relationships.

Because subjects who had both accepted and rejected treatment were included in the sample,

the range of the number of interviews of the 31 subjects of this investigation was from 1 to 28. This narrow range was imposed by the condition for selection that the subjects not have been in contact with the Clinic during the preceding six months. This condition restricted the selection to subjects admitted and terminating within the preceding calendar year, inasmuch as the Clinic had been operating for only 18 months at the time of this study.

Table 1

Summary of the Diagnoses of the 31 Subjects

	Number of Subjects
Psychiatric Diagnoses:	
Anxiety reaction	12
Conversion reaction	5
Schizophrenic reaction	3
Asthenic reaction	2
Hypochondriacal reaction	2
Emotional instability reaction	2
Passive dependency reaction	2
Encephalitis, lethargic	1
Aggressive reaction	1
Acute situational maladjustment	1
Degree of Incapacity	
Minimal	16
Moderate	14
Marked	1

An examination of Table 1 shows the psychiatric diagnoses and degree of incapacity of the 31 subjects at the time of their initial Rorschach test. The diagnoses were made using standards set forth in the Veterans Administration Technical Bulletin 10A-78, 1947. Twenty-eight of the subjects had completed 8 or more years of formal education, and were between 20 and 30 years of age. Fifteen of the subjects were married. Four of the subjects were Negroes. The subjects who were not included in this investigation (i.e., the 15 who had moved, the 5 who did not respond, and the 1 who did not cooperate) were similar in all of the above respects to the 31 subjects included in this investigation.

When he returned to the Clinic, each of the 31 subjects was given a relatively standardized survey-type evaluative interview lasting about 2 hours. This follow-up interview was designed to elicit reports of behavioral incidents and of the functioning adjustment level of each subject in the following 14 areas of behavior: Mother, Father, Siblings, Morals, Religion, Marriage, Sex, Social Relations, Personal Relations, Academic, Vocational-Occupational, Level of Aspiration, Future, and Self-Concept. The interviews were dictated from notes in as nearly verbatim fashion as was possible. Immediately following the interview, each subject was given a Rorschach retest which was recorded as completely as possible, but not scored. The techniques of free association and inquiry recommended by Klopfer [14] were followed. Each follow-up interview and the Rorschach retest were conducted by the senior author.

The junior authors each made judgments of the adjustment level of each subject in each of the 14 areas of behavior listed above. A modification of Morton's rating scale [19] was used in making these judgments. Concerning this scale Morton states:

> This rating scale is designed to evaluate the effectiveness of therapy by evaluating the degree that adjustment or maladjustment is contained within or generalizes from 1 area of behavior or relationship to other major areas of behavior or relationships. Continua within 14 areas considered as important by the experimenter were established on which adjustment is to be rated. These continua vary from a concept of healthy adjustment wthin an area which generalizes to and facilitates development and adjustment in other major areas, through positive adjustment which is generally effective adjustment, to the concept of maladjustment in the relationship which generalizes to and dominates other major areas of adjustment. Each continuum contains (at least) 2 dimensions: (1) the dimension of generalization of effect and, (2) the dimension of intensity of conflict. It is postulated that these 2 dimensions are highly positively related but not necessarily in absolute relation [19, p. 358].

The use and reliability of Morton's scale have been described in earlier reports [2, 19, 20].

After making judgments in each of the 14 areas listed above, the junior authors each made a global rating of the adjustment level of each subject. All judgments were based upon the written reports of the initial and follow-up interviews. Only the global ratings were utilized as the criterion for this research. The two protocols for each subject were rated separately in chronological order, and a com-

parison of the two protocols entered into the judgment of the direction and degree of change. All of the protocols were rated independently by the two judges before pooling. In the 12 cases where the raters disagreed concerning the degree of change, both judges reread and rerated the protocols and then discussed their differences of opinion. Finally, the ratings of each subject by the two judges were averaged, with equal weight assigned to each rating.

The initial and retest Rorschach records were given a code number and typed in a standard form. All response scores and the names of the subjects were omitted from the typed records. The typed initial and retest Rorschach records were combined randomly into one group of 62 records. The records could be identified only by code number. The records were then scored by the senior author using the scoring conventions suggested by Klopfer [14]. In order to increase the consistency and objectivity of the scoring of each response, the responses to Card I on all 62 tests records were scored before any of the responses to Card II were scored. In the same way, all responses to each of the other cards were scored card-by-card rather than in the usual way of subject-by-subject. In scoring the responses, no reference was made to a subject's other Rorschach responses or to other data about that subject. After the records were scored, the conventional summary [14] of Rorschach scores and certain additional summary scores thought to be related adjustment [5, 6, 9, 15, 18, 22] were determined for each subject's test records. The summary scores and combinations of these scores constituted the experimental variables in this research.

Because the scoring of the response determinants was considered more subjective than the scoring of the location and the content of each response, two experienced clinicians[2] were asked to rescore the determinants of four of the 62 test records. Two of the four records were initial test records, and two were retest records. The four records were from four different subjects. The agreement among the two clinicians and the senior author in the scoring of the four records (see Table 2) suggests that the scoring of the senior author was consistent and can be duplicated.

[2]They were Dr. Boyd R. McCandless and Dr. Mervin Patterson.

Table 2

Agreement in Scoring Determinants of Four Test Records (105 Responses)

Determinants scored	AvBvC*		AvB		AvC		BvC	
	N	%	N	%	N	%	N	%
Exactly the same	59	56	62	58	71	67	72	68
The same except for disagreement as to order of determinants	27	26	26	25	18	17	22	21
Identical main determinant but different additional determinants	8	8	8	8	8	8	7	7
Differently	11	10	9	9	8	8	4	4

*Agreement between scorers A, B, and C. Scorer C was the senior author.

Hypotheses suggested in the references listed in the second column of Tables 3 and 4 were tested by correlating the Rorschach scores and combinations of scores with the pooled judgments of adjustment level. Since perfect scaling of the Rorschach scores and the pooled judgments of adjustment level was not assumed, the rank-order correlation technique was believed to be more appropriate than the product-moment correlation technique.

Hypotheses that changes in retest Rorschach scores and combinations of scores were associated with change in a subject's adjustment level were tested by correlating changes or differences between the retest and initial test scores with change in the pooled judgments of adjustment level based on interview data collected at the time of the two tests. Correlation coefficients between the changes in Rorschach test scores and change in the total number of responses produced (R) were also computed.

Hypotheses that Rorschach scores and combinations of scores were indicative of a subject's adjustment level were tested by correlating the *retest* Rorschach scores with the pooled judgments of adjustment level based on the evaluative follow-up interviews which immediately preceded the retests. Hypotheses supported by significant correlation coefficients between retest and follow-up interview data were then tested (by correlation) using the initial test and interview data. The Rorschach

retest and follow-up interview data were used initially in testing the hypotheses rather than the first test and interview data for two reasons:

(*a*) The retests were administered by the same examiner to all 31 subjects, whereas the initial tests were administered by four different examiners. Also, the follow-up interview data were more standardized than the earlier interview data i.e., the same questions were asked in each follow-up interview, the same interviewer conducted each follow-up interview, etc.). Thus variances due to these factors in the retest Rorschach and follow-up data were less than variances due to these factors in the initial Rorschach and corresponding interview data.

(*b*) The pooled judgments of adjustment level based upon the follow-up interviews were less restricted in range at the adjustment end of the scale, than the judgments based upon the interview data collected at the time of the initial Rorschach tests. The use of the less restricted range of judgments minimized the possibility that relationships present in the data might be overlooked.

Three characteristics of the treatment situation were defined which were suspected of influencing the subject's adjustment level as reflected in the interview data and in the number of responses produced (R) on each test. The three characteristics were (*i*) the number of treatment interviews, (*ii*) the number of days between the first and last treatment interview, and (*iii*) the number of days between the last treatment interview and the Rorschach retest.

Correlation coefficients were computed between each of these characteristics singly and (*a*) change in the pooled judgments of adjustment level from the time of the initial test to the time of the retest, (*b*) change in the number of the responses produced (R) on the retest, (*c*) the pooled judgments of adjustment level at the time of the retest, and (*d*) the number of responses produced on each retest. Hypotheses that any of the resulting correlation coefficients were not significantly greater than zero could not be rejected, even at the 10 per cent level of confidence. None of these characteristics appeared to be associated with the subject's adjustment level as reflected in the interview data, nor with the number of responses produced on the Rorschach tests.

Results and Discussion

When *change* in the pooled judgments of adjustment level from the time of the initial test to the time of the retest was correlated with *retest changes* in those Rorschach scores and combinations of scores listed in the first column of Tables 3 and 4, only 3 of the 70 rank-order correlation coefficients computed were significantly greater than zero at the 5 per cent level of confidence. Change in the direction of improvement in the pooled judgments of adjustment level was associated with increased form-color production, FC and $FC\%$, and increased production of human content, $(H + Hd)\%$. While these relationships are consistent with Rorschach theory, this small number of significant correlation coefficients could be attributed to chance factors alone.

Changes in more than half of the Rorschach scores and combinations of scores were associated significantly with change in the number of responses produced (R) on the retest. However, the hypothesis that change in the number

Table 3

Relationships Between Judgments of Adjustment Level and the Determinants on the Rorschach Retests of 31 Subjects

Determinants	Relationship suggested in reference	ρ with number of responses	ρ with judgments N†	ρ with judgments %‡
M	4,11,18,21	.601*	.429*	.577*
FM	5,14	.661*	.027	.236
M/FM	5,18,22	.029	.376*	.376*
M—FM	18,21	−.288	.348	.250
M+FM+m	22,28	.497*	.205	.459*
FC	3,18,23,29	.404*	−.097	.062
CF+C	3,22,23,28	.248	−.254	−.188
FC/CF+C	5,22,28	−.121	.115	.115
FC—CF—C	6,21,28	.035	.174	.157
Sum C	3,5,21,22	.475*	−.255*	—
M/Sum C	13,22,26	.247	.640*	—
M—Sum C	22,26	−.167	.535*	—
M+FC—CF—C	6,21	.381*	.495*	.579*
F	14,23,29	.786*	−.309	−.298
F%—50%	6,18,28	−.363*	—	.152
FK+F+Fc	14	.844*	−.255	−.312
Fc+c+C′	14	.497*	.024	.158
Chiaroscuro	12,21,23	.305	−.101	−.115
All shading	3,5,12	.602*	.178	.184
Number of responses (R)	7,18,27,30	1.0	.082	—

*Significant at better than the 5 per cent level of confidence.

†Rho between judgments of adjustment level and the number of times a determinant was used on the retest.

‡Rho between judgments of adjustment level and the ratio comparing the number of times a determinant was used with the total number of responses produced on the retest.

of responses produced on the retest was associated with change in adjustment level was not supported statistically.

Correlation coefficients between pooled judgments of adjustment level and retest Rorschach scores and combinations of scores are listed in Tables 3 and 4. Examination of the first line in Table 3 indicates that the relationship between the absolute number of movement-determined responses (M) and the total number of responses produced (R) on each retest record was significant statistically ($\rho = .601$), that the relationship between the pooled judgments of adjustment level and the number of times movement-determined responses were produced (M) was significant statistically ($\rho = .429$), and that the relationship between the pooled judgments of adjustment level and the ratio comparing the number of times movement-determined responses were produced with the total number of responses produced (M/R or $M\%$) was significant statistically ($\rho = .577$). The latter correlations suggest that well-adjusted subjects tend to produce more movement-determined responses than less well-adjusted subjects. References 4, 11, 18, and 21 listed in the second column of Table 3 had suggested to the authors that this relationship existed. Hypotheses concerning relationships between adjustment level and Rorschach's *Erlebnistypus* [26], the balance between movement- and color-determined responses (e.g., $M/Sum\ C$), were supported statistically. Hypotheses concerning relationships between adjustment level and the use of other determinants (e.g., Form, Color, Shading, etc.) were not supported statistically.

Table 4

Relationships Between Judgments of Adjustment Level and the Scores on Rorschach Retests of 31 Subjects

Scores	Relationship suggested in reference	ρ with number of responses	ρ with judgments N†	ρ with judgments %‡
W	5,22,26	−.149	−.033	.057
W/M	25	−.480*	−.569*	−.569*
(W/M) —(1/2)	5,14	−.412*	−.467*	−.467*
Dd	5,14,22	.705*	−.208	−.178
$Dd+S$	14,22,23	.673*	−.201	.157
F	1,27	.557*	−.010	.087
Succession	14,22	.223	.308	—
Rejections	4,21,26	−.442	.009	—
H—Hd	3,21	.012	.414*	.479*
$H+Hd$	3,23	.637*	.269	.472*
$A+Ad$	11,18,26	.896*	−.206	−.137
$(A+Ad)\%$—40%	5,18,22	−.255	—	−.465*
$(H+Hd)/(A+Ad)$	3,14,23	.155	.314	.314
$Hd+Ad$	3,14	.789*	−.188	−.207
$(H+A)/(Hd+Ad)$	6,21	−.559*	.277	.277
Sign 82, rocks, shadows, etc.	5,23	.298	−.271	−.260
Sign 93, ghosts, spiders, etc.	5,28	.179	−.384*	−.327
Lindner's signs	15	.436*	−.073	—
Elizur's $a+h$	9	.610*	−.136	—
BR Score	5,16	.757*	.089	—
Munroe's Rating	8,17,22	−.081	−.205	—
Neurotic signs	10,18,24	−.678*	−.295	—
Carr's signs	6,10,21	.372*	.365*	—

*Significant at better than the 5 per cent level of confidence.

†Rho's between judgments of adjustment level and Rorschach scores expressed in terms of absolute numbers.

‡Rho's between judgments of adjustment level and Rorschach scores expressed in terms of per cents of the total number of responses on the retest.

Examination of the correlation coefficients listed in Table 4 shows that the subjects judged to be better adjusted had lower W/M ratios (i.e., they produced a larger number of movement-determined responses than responses which utilized the whole card). Hypotheses concerning relationships between adjustment level and the human and animal content scores, H—Hd, $(H + Hd)\%$, and $(A + Ad)\%$ —40%, were supported statistically.

Hypotheses concerning relationships between adjustment level and the content signs of Elizur [9] and Lindner [15] were not supported statistically. Subjects who gave responses of "spiders, dead, injured animals, corpses, snakes, gorillas, ghosts, monsters, frightening fantasy figures, torn or shaggy objects" (all included in the Buhler, Buhler, and Lefever Diagnostic Sign 93) were judged to be rather poorly adjusted ($\rho = -.384$).

When Carr's modification [6] of Muench's signs was used, the retest records containing the larger numbers of positive adjustment signs were those given by the better adjusted subjects ($\rho = .365$). Although earlier investigators [6, 10] had not found a significant relationship between Muench's signs and adjustment level, a correlation coefficient as large as .365 could be expected to occur less than 5 times in 100 if no relationship were present.

Hypotheses concerning relationships be-

tween adjustment level and the three summary scores derived from Buhler, Buhler, and Lefever's Diagnostic Sign List [5], Munroe's Check List [22], and Miale and Harrower-Erickson's list of neurotic signs [18] were not supported statistically. The present authors realize that their use of Buhler, Buhler, and Lefever's Basic Rorschach Score [5] and Munroe's Adjustment Rating [22] was not valid because these sign lists assume techniques of test administration and scoring which were different from those used in the present research. However it was hoped that these sign lists might prove to be useful when the Rorschach test was administered and scored in the conventional manner.

The 43 strongest relationships between the criterion of adjustment level and the retest Rorschach scores listed in Tables 3 and 4 were tested again using the initial Rorschach test and corresponding interview data. Only the correlation coefficients between the criterion and the Buhler, Buhler, and Lefever Diagnostic Sign 82 were significant statistically. Possible interpretations for the low correlation between the initial test and interview data are (*a*) that the use of the more restricted range of criterion judgments (i.e., those based upon the earlier interview data) may have resulted in lower correlation coefficients, and (*b*) that the greater variances in these data due to test examiner and interviewer differences tended to obscure the relationships found when variances due to these sources were controlled by the procedures used in obtaining the retest and follow-up interview data. Since initial test and interview data were not collected with this research project in mind, these data may have been somewhat inadequate for the purpose.

The correlation ratio between the number of responses produced (*R*) on the retest and the pooled judgments of adjustment level was .726. Either very large or very small numbers of retest Rorschach responses were made by the less well-adjusted subjects. This relationship was not found when the initial test and interview data were analyzed. No other curvilinear relationships were evident when scattergrams were plotted showing relationships between the Rorschach scores and the pooled judgments of adjustment level, and also between the Rorschach scores and the number of responses produced (*R*).

The number of responses produced on the retest was associated significantly with many of the Rorschach retest scores (see Tables 3 and 4). Cronbach [7] has suggested that a single pervasive Rorschach score, such as the number of responses produced (*R*), might account for much of the correlation between other Rorschach scores and adjustment criteria. since *M Sum C, M/FM, H—Hd, (A + Ad)%—40%*, and Buhler, Buhler, and Lefever's Sign 93 were relatively independent of the number of responses produced, the significant relationships between these scores singly and adjustment level may prove useful in assessment problems. Following Wittenborn's suggestion [30], it is possible that these scoring categories which are more independent of the number of responses produced (*R*) should be accorded a more significant meaning in Rorschach theory.

Summary and Conclusions

Rorschach test and retest data from 31 former male patients at a VA Mental Hygiene Clinic were compared with pooled judgments of adjustment level based upon interviews made at the times of the two Rorschach tests. Hypotheses that changes in Rorschach retest scores were associated with change in judgments of adjustment level were not supported statistically. Several retest Rorschach scores and combinations of scores were associated significantly with judgments of adjustment level at the time of the retest (see Tables 3 and 4). However, these associations were not found when initial test and interview data were analyzed.

Changes in more than half of the Rorschach scores and combinations of scores were associated significantly with change in the number of responses produced (*R*) on the retest. The number of responses produced on the retest was associated significantly with many of the Rorschach retest scores (see Tables 3 and 4). There was a curvilinear relationship between the number of responses produced and the judgments of adjustment level at the time of the retest (eta = .726). *M/Sum C, M/FM, H—Hd, (A + Ad)%—40%*, and Buhler, Buhler, and Lefever's Sign 93 were relatively

independent of the number of responses produced; hence the significant relationships between these scores singly and adjustment level may prove useful in assessment problems and meangingful for Rorschach theory.

Received April 18, 1951.

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Profile Patterning and Coding of the Rorschach Test: A Preliminary Report of Research Methods and Materials[1]

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The following is a brief description of the methods and materials being used in a research project designed to explore the possibilities of profile patterning and coding of the Rorschach test by a somewhat new approach.[2]

This project was suggested as the result of several years of experience with the Minnesota Multiphasic Personality Inventory, in which the usefulness of profile patterns and coding in research and in diagnostic interpretation has become increasingly clear [1, 2, 4, 5, 6, 7, 9, 10, 11, 12, 13].

The objectives of the project have been as follows:

1. To select a uniform method of administering, recording, and scoring Rorschach records. This was, of course, a necessary first step in any research with the Rorschach, in view of the many methods in use.
2. To prepare *T*-tables (standard score equivalents for raw scores) for as many of the commonly used Rorschach scoring factors and ratios as possible, using the best available normative data.
3. To develop a standard score profile chart for recording the individual profiles of all subjects tested.
4. To devise a coding system which will permit the collection and systematic recording of the significant characteristics of these profiles.
5. To determine whether profile patterns can be identified which correspond to, or are associated with, certain diagnostic classifications or personality variables as determined by other means (i.e., other test profiles, psychiatric judgments or ratings, personal history data, etc.).
6. To investigate the separate scoring factors in the profiles and attempt to evaluate their significance and probable psychological meaning in relation to other factors in the pattern.

Since research has not as yet progressed beyond the first four objectives, only these can be considered at this time.

Selection of a Standard Method of Administering, Recording, and Scoring the Protocols

The method selected for administering, recording, and scoring the individual Rorschach protocols was that described by C. Buhler, K. Buhler, and W. Lefever [3].

This method was chosen because it seemed to provide: first, a fairly well-defined and objective method of administering, scoring, and recording the test results; second, a considerable amount of normative data; and third, an opportunity to study and test a number of postulates and claims made by the authors, such as the concept of levels of personality integration, the diagnostic usefulness of the "Basic Rorschach Score" (*BRS*), etc.

Since this method differs from other methods in several important respects, the *T*-tables

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[2]This project is one of several research studies being carried on by members of the staff and the clinical psychology trainees of the Clinical Psychology Section, VAH, Minneapolis Minnesota. Joel M. Cantor (3rd year trainee) particularly has given considerable time to this project.

and profile chart to be described later should only be used when the Buhler-Lefever method of administering and scoring has been employed. Although the method is based upon the Klopfer-Kelley system [8], there are certain important modifications. These may be summarized as follows:

(*a*) *Administration* [cf. 3, p. 53]. After the first response to Card I, the subject is told he may turn the card in any direction and that he "can say something about the whole card or any part of it." He is also asked to give from three to five responses per card. More than five responses per card, however, are discouraged. The subject is encouraged to give a response whenever a card is rejected.

(*b*) *The inquiry.* As in other methods, the inquiry following the main presentation of the cards is used primarily to establish the characteristics which are needed to score the determinants; i.e., whether movement or life are seen; whether color is used or disregarded; and whether and how shading is used. Questions about location are also asked if some detail is still unclear. The authors state that they have tried to make the inquiry more objective and less time consuming by eliminating indirect questions which require "self-analysis on the part of the subject." This is accomplished by more direct questioning as to the use of determinants. The questions are always presented as alternatives and are introduced by a statement such as "How do you see this—as .....? or as .....?" [see examples, 3, p. 66]. With regard to such questioning, the authors emphasize that the subject is asked only to choose between determinants and not to decide whether a particular one was the decisive determinant of a response. They believe that subjects cannot be expected to make judgments as to decisiveness; whereas, in presenting alternatives, it is possible to establish the determinants much more quickly and accurately than is possible when the customary detour questions are asked. Our experience during the past two years with this more direct method of inquiry would seem to confirm these opinions. Since we have not made comparisons with other methods, we are not, however, prepared to say to what extent this influences the subject's responses. Our subjective judgment is that it does not affect responses as much as might be feared by those who stress the importance of a strictly indirect approach.

(*c*) *Scoring.* As was indicated previously, the Klopfer-Kelley system of scoring is used throughout [8]; however, some important modifications are made, as follows: (*1*) All responses with poor form are scored *F*— regardless of the determinant used. The *F*— score, therefore, is the sum of all such poor form responses. (*2*) The *CF* and *C* responses are combined into one score. Sample lists are provided for scoring *F*—, *FC*, *CF*, and *C* [cf. 3, pp. 61a and 62]. (*3*) Certain responses, such as animal skins and rugs, silk, rocks, coral, iron, and other materials and objects are scored as texture without further inquiry [cf. list, 3, p. 61]. (*4*) Some of Klopfer's scoring factors are not used, such as $F+$, $Fm+m:F:c+c+C'$, while several new ones are introduced (viz., *S* as a separate scoring factor, the differential reaction time to achromatic and chromatic cards, *FM%*, $k+K$, and *Sh%* (shading per cent). (*5*) In transferring the scoring factors to the sign list, all additional *S* responses and additional determinants are counted as .5 and are added to the main score. (*6*) A special list of contents is also scored according to a specially devised system of weights [cf. scoring items 75 to 93 on the "Diagnostic Rorschach Sign List," 3, p. 11].

The Record Blank

The record blank used in conjunction with the *T*-tables and profile chart is a tabulating and scoring form which has been developed over a period of years by the author and has again been revised for this research project. It is arranged so that all of the subject's responses can be tabulated, summated, and scored on a single $8\frac{1}{2}'' \times 15''$ sheet.

Although the scoring categories follow the traditional order (Klopfer), the blank is arranged so that the number of responses (or rejections), the reaction time of the first response to a card, the location, the determinants, the content, and significant verbalization and behavior are shown separately for each of the ten cards. The scoring categories then are summated and percentages computed as may be required in columns provided at the right of the blank. These columns are arranged so that all of the Klopfer-Kelley scoring factors and ratios as well as the scoring factors used by Buhler with the Diagnostic Rorschach Sign List can be easily computed and transferred to the Sign List (if this is used) or to the profile chart (Fig. 1), as may be desired. Space is also provided at the bottom of the blank to tabulate content, including the special categories scored by Buhler on the Sign List. Thus the record blank can be used in the usual manner (Klopfer scoring) or in conjunction with the Buhler Sign List or the profile chart.

In practice, we have found that the form is compact, quite easily computed, and reasonably comprehensive for most research purposes.

The *T*-Tables

The *T*-tables which have been prepared give

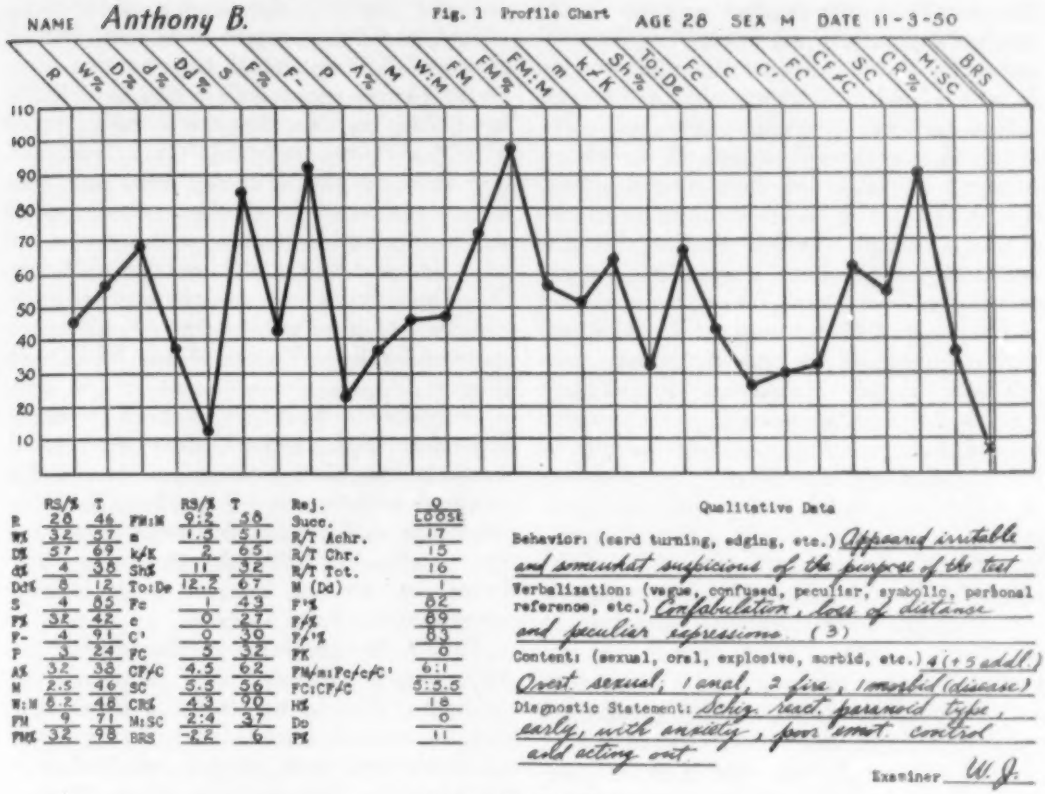
NAME Anthony B.
Fig. 1 Profile Chart
AGE 28 SEX M DATE 11-3-50
R W% D% d% Dd% S F% F- P A% M W:M FM FM% FM:M m k+K Sh% To:De Fc c C' FC CF+C SC CR% M:SC BRS
110
100
90
80
70
60
50
40
30
20
10
RS/% T RS/% T
R 28 46 FM:M 9:2 58
W% 32 57 m 1.5 51
D% 57 69 k/K 2 65
d% 4 38 Sh% 11 32
Dd% 8 12 To:De 12.2 67
S 4 65 Fc 1 43
F% 32 42 c 0 27
F- 4 91 C' 0 30
P 3 24 FC 5 32
A% 32 38 CF/C 4.5 62
M 2.5 46 SC 5.5 56
W:M 6.2 48 CR% 4.3 90
FM 9 71 M:SC 2:4 37
FM% 32 98 BRS -2.2 6
Rej. 0
Succ. 100%
R/T Achr. 17
R/T Chr. 15
R/T Tot. 16
M (Dd) 1
F'% 62
F/% 89
F/'% 83
FK 0
FM/m:Fc/c/C' 6:1
FC:CF/C 5:5.5
H% 18
Do 0
Pf 11
Qualitative Data
Behavior: (card turning, edging, etc.) Appeared irritable and somewhat suspicious of the purpose of the test
Verbalization: (vague, confused, peculiar, symbolic, personal reference, etc.) Confabulation, loss of distance and peculiar expressions (3)
Content: (sexual, oral, explosive, morbid, etc.) 4 (+5 addl.) Overt sexual, 1 anal, 2 fire, 1 morbid (disease)
Diagnostic Statement: Schiz. react. paranoid type, early, with anxiety, poor somat. control and acting out
Examiner W. J.

Fig. 1. Profile Chart.

the standard score equivalents for raw scores for 28 Rorschach scoring factors and ratios. Of these, 22 are used in the Klopfer-Kelley scoring system (*R, W%, D%, d%, Dd%, M, W:M, FM, FM:M, m, F%, F—, Fc, c, C', FC, C, CR%* [VIII to X%], *M:C, A%, P,* and *To:DE* (*H + Hd:A + Ad*). The other 6 (*S* as a separate scoring factor, *FM%, k + K, Sh%* (Shading per cent), *CF + C,* and *BRS* (Basic Rorschach Score) are new scores or combinations used with the Buhler Sign List.

These tables were prepared primarily from data supplied by Buhler, Buhler, and Lefever in Tables IV and XVIII [3, pp. 17-19, 111]. In these tables the authors give the means and standard deviations for each scoring factor (Table IV) and for the Basic Rorschach Score (Table XVIII) for each group of subjects used in their standardization study. The entire group consisted of 518 cases divided as follows: 99 normals (4 different samples of which 53 were student nurses), 87 psychoneurotics of various types, 87 psychopaths of various types, 18 manics, 9 involutional melancholia cases, 69 organics of various types, and 49 schizophrenics of various types.[3]

In computing the *T*-scores, the means and standard deviations of the entire standardization group were used rather than those of the normal samples only, except for the Basic Rorschach Scores.[4] This was done for several

[3]Standard values for each factor were assigned by taking the nearest integral value of *T* in the formula $T = 50 + 10\,\frac{(X_1 - \bar{X})}{\sigma}$ where X_1 is the raw score and $\bar{X}$ and σ the mean and standard deviations of the raw scores for the entire standardization group.

[4]*T*-scores for the *BRS* were derived from the combined data for the normal groups (i.e., normals I, II, III, and student nurses), since the mean and *SD* of the entire standardization group are not given. The mean and *SD* used were 15.2 and 8.6 respectively.

reasons. First, the number of cases in the normal groups was quite small (normals I and II N = 30, III N = 16, student nurses N = 53), and these groups could not be considered an adequate sample of a normal population. Second, comparisons of the means and standard deviations of these normal groups with each other as well as with those of two similar "normal" groups obtained by the author showed considerable variation for many of the scoring factors. Third, there seemed to be no particular advantage in using the smaller normal groups since the primary consideration in this research was to find some common point of reference (i.e., a normative group) with which to compare subjects so that standard score profiles could be constructed, rather than to try to determine how such subjects might compare with a normal group. Stated in another way, the composition of the normative group is relatively unimportant if it is large and fairly representative, since it is the patterning or relative height, rather than the absolute height of the individual *T*-scores that is of primary interest; hence, the *T*-scores need not necessarily be derived from any particular normative group. Present work with the Minnesota Multiphasic Personality Inventory provides a similar example. Workers with this test are now interested primarily in the pattern and only secondarily in the absolute values of the scores on the various scales [1, 4, 5, 6, 9, 10, 12, 13]. Furthermore, no one is overly concerned that a subject being tested might not be represented adequately in the group of normals used in standardizing the MMPI.

The use of the tables needs little explanation. After the Record Form has been completed and scores have been obtained for the various Rorschach factors, each raw score or percentage is located in the first column of the table (*RS*) and the corresponding *T*-scores are found in the columns for the particular scoring factor. In the case of ratios such as *W*:*M*, *FM*:*M*, etc., the "proportion score" is obtained by dividing the first value of the ratio by the second.

It should be noted that there was a very narrow range of raw scores for some of the factors (*S*, *m*, *k* + *K*, *Fc*, *c*, and *M*:Σ*C*) and the distribution of *T*-scores was not very satisfactory.[5] Similarly, the values given for *W*%, *W*:*M*, and *F*% appeared to be quite high at *T*-score 50. It was found, however, that within the *T*-score range of 40 to 60 (i.e., ≠1 *SD*) most of the corresponding raw scores compared closely with the expected "clinical values." For example, Hertz, Mons, and others consider about 3 to 4 *M*'s as the expected number for nonpsychiatric subjects, and a raw score of 3.5 in the tables falls exactly at *T*-score 50. Similarly, about 5 to 6 popular responses are expected in a "normal record," and a raw score of 5 falls at *T*-score 47 and 5.5 falls at *T*-score 52.[6]

It should also be noted that the *T*-scores for Rejections (*Rej.*) and *FK* were not included in the tables. They were omitted because the standard deviations were nearly as large as the means, and the distribution of scores was very small. We still take these and other factors into account, however, in the over-all interpretation of the protocols.

Finally, it should be mentioned that the present range of possible *BRS* scores is from +34 to −73. In the tables, however, the range of scores is extended to a +66 (to permit further revisions upward) and the lowest raw score is −29, since it falls at zero *T*-score. In practice, we have found the range of scores to be from approximately +30 to −45.

The Profile Chart

The standard score profile chart (Fig. 1) also needs little explanation. In using the chart, all of the raw scores or percentages are first entered in the lower left columns of the blank and then the corresponding *T*-scores are found in the *T*-tables and entered opposite them. The *T*-score for each factor is then located by a dot on the vertical line corresponding to the particular scoring factor. The last column at the bottom of the chart is used to enter supplementary scores which are not used

[5] We considered the advisability of "normalizing" the distributions using a method such as the one utilized by Hull, but decided that it was probably not warranted at this time.

[6] It seems unnecessary to emphasize to anyone familiar with the Rorschach that the quantity of a particular type of response is only one aspect of interpretation, and that the number of responses not only varies greatly in so-called normal records but that there are many qualitative differences that are of primary importance.

in the profile. Similarly, significant behavior, verbalization, and content are briefly summarized, and a brief diagnostic statement is made in the appropriate spaces provided at the right. Thus the form serves as a profile and summary of the more important quantitative and qualitative data of the test protocol.

It should be noted that the particular grouping of the scoring factors on the profile is at this time entirely arbitrary. As given here, they are provisionally grouped according to response, approach, reality perception and related factors, drive relationships, anxiety factors, and emotional responsiveness. It is quite likely as research progresses that some other arrangement may be found to be a more useful one. It is also possible that as the profiles are collected and studied some of the scoring factors or combinations of factors may be of little significance insofar as patterning is concerned.

Finally, it should be emphasized that the profile only takes into account a limited number of the total factors and relationships which must be considered in interpreting a protocol. It is not intended and should not be used, therefore, as a substitute for the traditional methods of interpretation but as an aid to them.

Preliminary Results and Projected Research

It will be necessary to collect a large number of profiles and to study and compare them with other data before the usefulness of this approach can be determined. Preliminary results, however, appear promising. For example, we have already been able to identify some patterns which may prove to be characteristic of certain psychiatric disorders.

We are also encouraged by the fact that the profile seems to bring the interrelationship of the factors represented into much sharper focus than is the case with the usual test score summaries or the determinant profile of Klopfer. Contrary to the view of some critics of quantification, we find that this approach does not limit or distort interpretation, but is an aid to it.

With regard to projected research, we plan systematically to collect and study the profile patterns of all subjects tested with the Rorschach and to compare these patterns with MMPI profiles and data from other tests and with psychiatric ratings, social history information, etc.

In connection with this, we have experimented with several methods of coding the profiles and are at present using a system similar to that developed by Welsh for the MMPI [12]. It differs from his method in that the Rorschach symbols are used rather than numbers, and digits are used as subscripts to indicate the magnitude of the T-scores.

In coding, the symbols for the mode of approach are given first (i.e., $W\%$, $D\%$, $d\%$, $Dd + S\%$ in order of highest to lowest percentage). This is followed by the symbols for the five highest scores on the profile in descending order of magnitude and then by the five lowest T-scores also in descending order of magnitude (excluding R and BRS). Subscripts are used to indicate the magnitude of the scores as follows: $9 = 90$ and over, $8 = 80$, $7 = 70$, etc., to 0 ($0 =$ scores from 0 to 9 inclusive). A single / is used to separate the symbols for the approach from the rest of the code and two // to separate the symbols for the high and low scores. In instances where two or more T-scores are within one point of each other they are underlined and the subscript is placed following them. In such instances this may result in more than 10 high and low scores in the code. For convenience in coding some abbreviations are also used and the % sign is dropped except in the case of FM and $FM\%$. The following example illustrates the procedure for a set of T-scores:

Approach:	$W\% = 57$, $D\% = 69$, $d\% = 38$, $Dd+S\% = 12$
Highest Scores:	$FM\% = 98$, $F- = 91$, $CR\% = 90$, $S = 85$, $FM = 71$
Lowest Scores:	$Sh\% = 32$, $FC = 32$, $C' = 30$, $c = 27$, $P = 24$
Code:	D_9, W_5, d_3, $Dd_1/FM\%_9$, $F-_7$, $\underline{CR_9}$, S_8, FM_7// $\underline{Sh}$, $\underline{FC_3}$, $\underline{C'_3}$, $\underline{c_2}$, P_2.

In recording the codes a $3'' \times 5''$ filing card is used which has already been prepared with two horizonal and eight vertical division lines at the top of the card (Fig. 2). Symbols for the approach are entered in the first horizonal

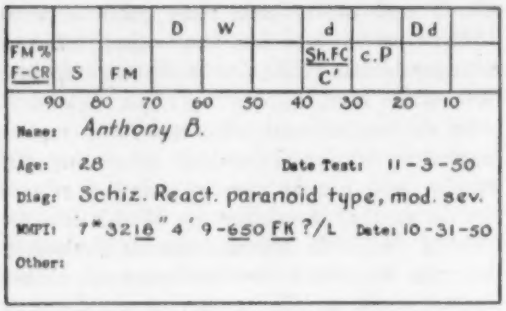

Fig. 2. Record Card.

division and the balance of the code in the second. A scale from 90 to 10 is provided below the second horizontal division line and the code symbols are entered in the appropriate scale divisions according to their magnitude. The total responses (*R* raw score) is also recorded in the lower left corner and the Basic Rorschach Score (*BRS* raw score) in the lower right-hand corner of the card. The remaining space on the card is used to record other pertinent data, such as the date of the test, the name and age of the subject, final diagnosis, other test codes, etc.

After the coding is completed, duplicate cards are made to enable cross filing for high and low scores. A white card is used for high scores and a blue card for low scores to distinguish them and prevent misfiling. The cards are then filed in one of three separate file drawers according to the total number of responses (*R*) in the test record as follows: File 1, $R = 0$—15, File 2, $R = 16$—35, File 3, $R = 36$ and over.

Each file drawer is further divided into a "high" and "low" score section and a duplicate card is filed in each section. Within each section the cards are then filed according to the predominant mode of approach (highest percentage) and then according to the other symbols of the code in alphabetical order. At present we are using the following alphabetization: *A, C', c, CF+C, CR, F, F−, FC, Fc, FM, FM%, FM:M, k+K, M, m, M:SC, P, S, SC, Sh, Td, W:M.*

So far we have found that the method of coding is quite simple and that filing does not require an excessive amount of time. It is possible, however, as a larger number of codes are collected that difficulties may arise which will make it necessary to revise the method.

Further reports of this project will be made as results warrant. However, persons interested in obtaining additional information may direct their inquiries to the author.

Received April 27, 1951.

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Qualitative Aspects of the Vocabulary Responses of Normals and Schizophrenics

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Vocabulary tests are used in two different ways in clinical testing: (*a*) as one of a series of subtests designed to measure intelligence, as in the Stanford-Binet, and (*b*) as an indicator of the individual's previous or original level of intellectual endowment in tests of deterioration such as the Babcock [2]. In intelligence tests, vocabulary is generally considered the best single measure of intelligence [14]. In tests of deterioration, the assumption is made that vocabulary remains stable with increasing age after maturity and is unaffected by malfunction [2, 11].

However, there is evidence that this assumption is not entirely justified and that vocabulary does decline with malfunction [1, 4]. This decline, however, may appear in terms of qualitative features which are obscured by the usual scoring techniques employed [5].

Yacorzynski [15] examined the postulates underlying the Babcock test and pointed out that a response to a vocabulary test item will be scored correct whether the definition given is difficult or easy. The deterioration test makes use of only the end results in the definition of words, and, therefore, superficially it appears as if vocabulary remains unaffected by general deterioration [15, p. 265]. He suggests the hypothesis that "the reason the vocabulary scores of deteriorated patients show a minimal amount of change from the predeteriorated level is that there are many appropriate solutions of varying difficulty and that the final result of defining a word can be made on the basis of easier definitions even if the mechanisms involved in the more difficult conceptual organization are no longer available" [15, p. 266].

Feifel [5], attempting to verify Yacorzynski's hypothesis, made qualitative analyses of the responses to the Stanford-Binet vocabulary test given by normals and abnormals equated in age, education, and vocabulary test score. A comparison of the responses given by the two groups revealed that normals selected significantly more of the "synonym" type of definition than did the abnormals, while the abnormals selected "use and description," "inferior explanation," "illustration," "repetition," "demonstration" types of definition with significantly greater frequency than the normals.

Earlier studies had shown that younger children tend to define words in specific and concrete ways whereas older children make use of definitions of a more categorical and abstract nature [3, 6, 7, 8, 9, 12]. For example, Feifel and Lorge [6] analyzed verbatim responses of children to the Stanford-Binet vocabulary and found that younger children gave significantly more "use and description," "illustration," "inferior explanation," "demonstration," and "repetition" types of definitions; older children gave significantly more of the "synonym" type of definition.

Comparison of the results of the analyses of children's and abnormals' responses to the Stanford-Binet vocabulary test led Feifel to conclude that the definition types used by abnormals were those characteristic of children of lower chronological and mental ages, and hence represent "easier" or inferior definitions. This he regards as supporting Yacorzynski's hypothesis. The concrete manner of approach used by the abnormal subject points up his close relationship to the child, since both em-

phasize the particular or isolated aspects rather than the class or categorical features of the meaning of words.

It should be noted that the Stanford-Binet vocabulary test, on which Feifel's findings are based, is a test of the recall type. If Feifel's conclusion — that the abnormal tends to use more childlike or inferior definitions emphasizing particular or isolated aspects of meaning — is general rather than specific to a recall test, abnormal subjects would be expected to give inferior responses in other types of vocabulary tests.

The present study was designed to investigate the differences between the performance of normal and schizophrenic subjects on a multiple-choice vocabulary test. Contrasted with the Stanford-Binet vocabulary test, this test does not require recall. Instead, the subject is asked to choose the most adequate response from four solutions, all of which are correct but of different types and levels of difficulty. Our first hypothesis states that in this situation schizophrenics will choose more definitions of an inferior type whereas the normals will select more of the superior definitions.

If the qualitative differences between the vocabulary test responses given by normals and abnormals are related to deterioration or loss of mental efficiency, it seems reasonable to believe that greater deterioration would lead to greater changes in vocabulary test performance. Our second hypothesis states that with increased deterioration or loss of mental efficiency, there is a greater tendency to choose "easier," inferior definitions.

Methods and Procedure

A specially constructed, objective vocabulary test and the Shipley-Hartford Retreat Scale [10] were the instruments employed in testing our hypotheses. The vocabulary test was used to determine the differences between groups in the types of definitions chosen. It consisted of 86 simple, commonly used words taken from the *Teacher's Word Book* of Thorndike [13]. For each word, class, description, example, and function definitions were constructed. For example, the word *ball* was defined as: 1. athletic equipment (*class*); 2. round and made of rubber (*description*); 3. baseball (*example*); 4. to play with (*function*). The definitions for each word were presented in a nonsystematic order so that the same definition type never appeared in the same position in consecutive items.

Since the investigators had constructed and classified the definitions, independent judgments were obtained from three judges who were asked to label each definition independently as class, description, function, or example. Comparisons of their classifications with each other and with those of the investigators yielded interjudge agreements ranging from 91 to 100 per cent.

From the Shipley-Hartford Retreat Scale, measures of intellectual endowment (i.e., vocabulary score) and mental efficiency or impairment (Conceptual Quotient) were obtained. Low Conceptual Quotients (CQ) are indicative of reduced mental efficiency or mental impairment.

The subjects of the study were 40 schizophrenic patients at the Mendota State Hospital, Madison, Wisconsin, and 40 normal control subjects who were matched with the schizophrenics with respect to age, vocabulary score on the Shipley-Hartford Retreat Scale, and educational level. The data of the matching are shown in Table 1.

Table 1

The Means and Standard Deviations of Vocabulary Score, Age, and Education Level of the Normal and Schizophrenic Subjects

Group	Vocabulary Score		Age		Educational	
	Mean	SD	Mean	SD	Mean	SD
Normal N = 40	27.57	4.07	28.8	5.80	10.97	1.51
Schizophrenic N = 40	26.35	4.24	31.0	5.92	10.37	1.78

Schizophrenic subjects were tested in groups of three and normal subjects in groups of two to six. The Shipley-Hartford was administered first, followed by either the first or second half of the vocabulary test. On the following day the other half of the vocabulary test was administered. Half of the normal group and half of the schizophrenic group, selected at random, received the first part of the vocabulary test first; the other half of each group received the second part first.

Instructions for the vocabulary test, given orally, were as follows: "Here is a list of words together with four possible definitions for each word. You are to underline the definition you think is best. *Remember,* for each word, underline only one definition, the one which you think best defines the word."

Results and Discussion

1. The testing of our first hypothesis involved the determination of which group of subjects selected more of each type of definition. Table 2 presents group means for each type of definition together with the results of the *t*-tests which were applied to test the significance of the differences between these means. As can be seen from this table, the results generally confirm our first hypothesis: schizophrenics selected a significantly greater number of function and example (inferior) definitions than normals; normals chose class (superior) definitions significantly more frequently than the schizophrenics did. The mean numbers of description definitions chosen by the two groups did not differ significantly from each other.

Table 2

Differences between the Normals and Schizophrenics in Types of Definitions Selected

Group	Class	Description	Example	Function
Normal				
Total	1470	1394	25	551
Mean	36.75	34.85	.63	13.77
SD	14.42	12.22	1.26	7.62
Schizophrenic				
Total	1109	1366	179	786
Mean	27.73	34.15	4.48	19.65
SD	12.07	12.20	8.05	8.08
t-values	4.42*	.45	3.16*	5.82*

*Significant beyond the .01 level.

2. We were also concerned with determining the rank-order of preference for the definition types for normals and schizophrenics. In the normal group, class definitions were most frequently selected; description, function, and example definitions followed in that order. Application of *t*-tests revealed that there were significant differences between the mean frequencies of selection of each definition type and every other type with one exception: the frequencies with which class and description definitions were selected did not differ significantly from each other.

The order of frequency of selection for the schizophrenic group was: description, class, function, and example. In this group, all mean frequencies of selection differed significantly from each other.

It is apparent that the orders of preference for the definition types are about the same for both groups. Both groups selected class and description definitions more frequently than the other two types. Although the schizophrenics selected more of the inferior definitions than normals did, they did not select only the inferior ones. Schizophrenics also tend to prefer the class or superior type of definition to the inferior ones.

3. It will be recalled that Feifel found that abnormals selected significantly more "use and description" definitions than the normals. Our findings, on the other hand, show no statistically significant difference between the frequencies with which description definitions were chosen by normals and schizophrenics. There are several possible explanations for this seeming discrepancy in the findings. First, since Feifel combined use and description types of definition, we cannot be sure that description definitions alone were selected more frequently by abnormals. Secondly, studies of the vocabulary development of children have shown that description definitions make their appearance after function and example, but before class definitions [3, 6, 7, 8, 9, 12]. Since this is true, description may represent an intermediate type of definition and therefore may not differentiate between the two groups.

4. The lack of a statistically significant difference between the two groups with respect to the frequency of choice of description definitions may be accounted for by qualitative differences among definitions of this type. It is possible that these definitions were of varying degrees of difficulty or conceptual level even though they were all classified in the same way. If this were so, we might hypothesize that when normals choose description definitions, they tend to choose those which are of a high conceptual level; when schizophrenics choose definitions of this type, they

tend to choose those of a lower conceptual level.

This last hypothesis was tested by determining which vocabulary items best differentiated between the two groups and then investigating the conceptual levels of the description definitions of these items. A chi-square test was applied to each item to determine whether or not the two groups differed significantly with respect to the distribution of their selections among the four definitions offered for that item. Of the 86 chi-square tests made, 39 yielded chi-square values significant at or beyond the 5 per cent level. In 36 of these 39 items, the description definitions were chosen more frequently by either the normals or the schizophrenics.

These 36 definitions were presented to three judges who were asked to rate each definition as follows: 1 if it represented a high conceptual level, 3 if it represented a low conceptual level, and 2 if it was neither high nor low. All items having an average rating of 2 or above were considered high conceptual level responses; those with average ratings below 2 were considered low conceptual level responses. Twenty-one of the 36 description definitions were selected more frequently by schizophrenics than by normals. Of these 21, 17 (80.9 per cent) were of a low conceptual level and four (19.1 per cent) were of a high conceptual level. On the other hand, of 15 description definitions selected more frequently by normals than by schizophrenics, only 4 (26.6 per cent) were of a low conceptual level, while 11 (73.4 per cent) were of a high conceptual level. A chi-square test applied to these percentages yielded a chi-square value of 10.4, significant beyond the one per cent level. This finding tends to confirm our hypothesis. In brief, description definitions selected more frequently by schizophrenics tend to be of a low conceptual level, whereas those more frequently selected by normals tend to be of a higher conceptual level.

The mean numbers of normals and schizophrenics selecting low and high conceptual level description definitions are shown in Table 3. As can be seen from this table, a significantly greater number of normals chose high rather than low conceptual level definitions. In contrast, the numbers of schizophrenics selecting high or low conceptual level description definitions did not differ significantly from each other. When they select description definitions, normals tend to choose those of a high conceptual level more frequently, whereas schizophrenics choose high and low conceptual level definitions with equal frequency.

Table 3

The Number of Subjects Selecting the Description Definitions of High and Low Conceptual Level

	High		Low		
Group	Mean	SD	Mean	Sd	*t*
Normal	21.33	8.72	11.4	6.7	3.58*
Schizophrenic	14.64	5.78	15.62	4.73	.52

*Significant beyond the .01 level.

Both of the above findings confirm our hypothesis with respect to normals. The results indicate that when normals choose description definitions, they tend to be of a high conceptual level. There is partial confirmation of our hypothesis with regard to schizophrenics. Compared to those definitions normals choose frequently, those which schizophrenics select with greater frequency tend to be of a low conceptual level, while, as a group, schizophrenics chose high and low level definitions with about equal frequency.

5. Our second hypothesis was tested by investigating the relationship between degree of mental impairment or loss of intellectual efficiency and response characteristics on the vocabulary test. This was done by correlating the CQ (Conceptual Quotient), a measure of deterioration derived from the Shipley-Hartford Retreat Scale, and the frequency of selection of each definition type. Table 4

Table 4

Correlations of the Number Selected of Each Type of Definition with the CQ Score

	Definition			
Group	Class	Description	Example	Function
	(.42)**			
Normal	.19	.06	−.48**	−.38*
Schizophrenic	.54**	−.23	−.03	−.41**

**Significant beyond the .01 level.
*Significant beyond the .05 level.

presents the correlations obtained for both groups.

In the normal group, there were significant negative correlations between CQ and number of function definitions selected and between CQ and number of example definitions selected. Although individually the frequencies of selection of class and description definitions did not correlate significantly with CQ, the addition of the frequencies of selection of these two types yielded a significant positive correlation with that measure of intellectual efficiency.

In the schizophrenic group, the number of class definitions selected and CQ were significantly and positively correlated, while the number of function definitions and CQ were negatively correlated. In general, these findings confirm our second hypothesis. With increased deterioration, there is an increased tendency to choose inferior definitions.

Summary and Conclusions

1. Forty schizophrenics and 40 normal subjects equated in age, education, and Shipley-Hartford vocabulary score were tested with the Shipley-Hartford Retreat Scale and a specially constructed vocabulary test. In this test, each vocabulary item was accompanied by four correct definitions, each of a different type, and subjects were instructed to choose the best one of the four correct responses. Comparisons of the responses of the two groups showed that (*a*) schizophrenics selected a significantly greater number of function and example (inferior) types of definition; (*b*) normals chose significantly more class (superior) definitions; (*c*) description definitions were chosen with about equal frequency by both groups.

2. The orders of preference for the definition types were about the same for the two groups. Both groups selected class and description types of definition more frequently than the other two types.

3. Among the description definitions, those selected more frequently by schizophrenics tended to be of a low conceptual level, whereas those selected more frequently by normals tended to be of a higher conceptual level.

4. Correlations between the Conceptual Quotient of the Shipley-Hartford Retreat Scale and the frequency of selection of each definition type revealed that with increased deterioration or loss of mental efficiency, there is an increased tendency to choose inferior definitions.

5. In general, these findings are comparable to Feifel's [5] and seem to substantiate Yacorzynski's hypothesis. In this situation, which differed from the recall type vocabulary test and consequently required a different method for the solution of the vocabulary problems, schizophrenics chose "easier" solutions more frequently than normals did. Increased loss of mental efficiency was related to increased use of these "easier" definitions. These findings lead us to conclude that the vocabulary of the abnormal or deteriorated patient merely appears unchanged; actually it is qualitatively different from the vocabulary performance of normals. Clinically, this would seem to mean that a patient's vocabulary test score alone gives an inadequate picture of his performance. Qualitative aspects and the conceptual level of his responses must be considered.

Received May 1, 1951.

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A Case History Blank as a Projective Technique

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There has been a recent trend toward the amalgamation of projective methods and the questionnaire approach. Hutt's [6] classification of personality tests suggests a continuum for all kinds of personality tests rather than a projective–nonprojective dichotomy. At one extreme are tests utilizing stimuli wholly unstructured (Rorschach ink blots) allowing free idiosyncratic response and at the other, multiple choice questionnaires. Between are tests such as the TAT, Sargent's "Test of insight into Human Motives," and techniques such as the one used here, the Pre-Interview Blank.

The purpose of this paper was to investigate the possibilities of using a relatively standardized case history blank as a projective technique. This involved finding differences in the manner in which subjects used the Pre-Interview Blank and ascertaining whether these were diagnostic of certain clinical groups.

The Pre-Interview Blank [7] is a case history blank consisting of sections of identification (name, age, sex, school, etc.), ability and achievement, physical health, college activities, interests and plans, present living conditions, attitudes on happiness, mental integration and sensitive matters, as well as sections on problems, personality traits, and history prior to college.

When attention is placed on the information the respondent supplies in the blank — the content of the blank—it is a non-projective instrument. When the manner in which the subject uses the blank is considered, and the expressive aspects of the respondent are studied, the blank is a projective device [1, 4, 13]. The stimuli in this blank represent various degrees of structuring. A subject may merely be asked to underline adjectives that apply to him in some way, or may be given an unstructured opportunity for projection. He may be allowed to write freely for a page or more. However, even in factual areas where the subject is asked only to underline adjectives descriptive of some topic, he is usually given the opportunity to include his own adjectives as well as to respond to those suggested. In certain parts of the blank, for example, the part eliciting information on the respondent's family, there is a request to "include" certain specific information such as temperament, compatibility, education, etc., with six or eight lines of space for this material. Respondents differ in their use of such questions. Some write on all the items on which information is requested and some omit certain topics and select others. The last page of the blank is unstructured in the sense that the heading on the page merely suggests that the subject give any factors in his life which may have been influential in making him sad or happy.

Our task was to devise a method to investigate various uses of such questions by the respondents. For example, in the area on parents noted above, the entire area may be rejected completely and no answer given. It may, however, be answered by some evasion of any of the questions asked, or the respondent may overrespond on one particular section such as "occupation of parents" and neglect the other suggestions for comment such as compatibility, attitudes, etc. Finally, the individual may meticulously respond to each suggestion, answering each in order, perhaps even to the extent of outlining his response.

Subjects

The subjects for this experiment were prewar students at the University of Missouri. They were the same subjects used in a previously published comparison of unselected students and students with emotional problems [8]. The control group consisted of unselected students, only in the sense that entire classes

of students in applied psychology were pooled without respect for any deviating characteristics of the individuals composing the group. The students represented some selection since they elected to take a course under a particular instructor, and in that they had at least one other course in psychology. It was assumed that this group was fairly representative of college students as a whole.

The experimental group was made up of miscellaneous neurotic individuals who were selected because their past and present behavior indicated rather pronounced emotional difficulties. They filled out the blank at an established student adjustment clinic to which they came for assistance. Both groups were similar in that they filled out the blank in anticipation of future contact with the same counselor. The control group did so as a part of a program of self-discovery.

The neurotic group and control group each included 200 subjects. Previous examination of the characteristics of these two groups showed that they did not differ significantly in respect to age, sex, or population of home town [8].

The 200 psychoneurotics were subdivided on the basis of clinical diagnosis made by one of the authors based on the entire case folder of the individual and his acquaintance with him. The two largest groups were the psychasthenics (53 cases), and the hysterics (24 cases). An attempt was made in the present study to see whether there were significant differences in projective behavior between the following groups: controls (*C*)[1] and psychasthenics (*P*), controls and hysterics (*H*), psychasthenics and hysterics, as well as between the controls and entire group of neurotics (*N*).

Method and Results

The four indices of expressive behavior that were used in the present study included *overreaction, originality, use of space,* and *feeling tone.* Each of these was defined operationally.

Overreaction. The first index that was found to be discriminating between the groups was the tendency of the neurotic group to overreact to the environment. Studies in food aversion by Wallen [12] and Gough [5] gave some indication that neurotics tended to dislike foods more intensely than the controls.

Several sections of the blank lent themselves to a study of overreaction. In the "G" section of the blank labelled "Attitudes" the subject was to rate himself on a 0 to 10 scale (0 is low and 10 is high), in his interest in the counseling interview, his present degree of happiness, present mental integration, present adjustment to the environment and other people, and the outlook for future fulfillment of ambitions. It

[1] In the remainder of the paper these groups will be cited by initial.

Table 1

Differences Between Control and Clinical Groups in Overreaction in the Pre-Interview Blank*

Section Showing Overreaction	Comparison of *C* and *N* Groups CR	*C* and *P* Groups CR	*C* and *H* Groups CR	*P* and *H* Groups CR
Attitude section				
Very low ratings (0–1)	−6.40**	−4.10**	− .23	.25
0 alone	−5.58**	−3.10**	−2.52*	.38
Very high ratings (9–10)	.71	2.70**	−1.96	−2.90**
10 alone	.00	.99	−2.62**	−2.90**
10 without interest in the interview	3.26**	3.90**	− .68	−2.22*
Use of vivid words in "Summary" section applied to:				
Happiness	1.86	1.92	1.40	.27
Sadness	−3.50**	−3.30**	−1.69	.41
Miscellaneous	4.30**	2.60**	2.47*	.16
Total Area	− .50	− .58	1.00	1.40
Number of words used in "Inner Life" section	−3.50**	−3.01**	.22	2.40*

*In this and the following tables items followed by a single asterisk are significant beyond the 5 per cent level and those followed by a double asterisk are significant beyond the 1 per cent level. The use of (—) minus signs with the CR is only for the sake of expediency and has no other meaning. A minus CR indicates only that the second of the compared groups is favored.

was postulated that the neurotics would tend to give more very low and very high ratings than the controls in this section.

Table 1 shows three areas in the blank in which overreaction was found to occur. These included the extreme ratings in "G," the attitude section, the vivid words in the "Summary" section, and the number of words used in the "Inner Life" section. To arrive at some measure of the use of extreme ratings, the mean number of 0–1 ratings, 9–10 ratings, as well as the mean number of ratings of 10 alone were computed for each of the groups—the controls, neurotics, psychasthenics, and hysterics. The differences between the means of the *C* and *N* group, *C* and *P*, *C* and *H*, and *P* and *H* groups were tested for significance, after the standard error of the differences and the critical ratios for each grouping were obtained.

From Table 1, it may be noted that on the low ratings of 0–1 and 0 alone, both the *N* group and the *P* group exceeded the *C* group, the differences in use being significant beyond the 1 per cent level. The *H* group mean was larger than the *C* mean but not at the 5 per cent level in the 0–1 ratings. When the 0 ratings alone of the *H* group were compared with the 0 ratings of the *C* group, the *H* mean was significantly greater than the *C* group mean. When the *P* and *H* groups were compared for very low ratings, the *P*s tended to give more low ratings than the *H*s, but the two did not differ significantly.

When the very high ratings of 9–10 as given by the groups were compared, the controls showed a tendency to use ratings of 9–10 more than the *N* group, although the difference was not significant at the 5 per cent level of confidence. No difference between the means of the *C* and the *N* group was found when the rating of 10 was taken alone. When the controls and the *P* group were compared for the use of ratings of 9–10, the controls gave significantly more high ratings than the *P* group. The hysteria group exceeded the *C* group in the very high ratings, both 9–10 and 10 taken alone, significantly. When the *P* and *H* groups were compared for very high ratings, it was found that the *H* group used both ratings of 9 and 10, and 10 alone, significantly more times than the *P* group. Taking the Summary, or last section of the blank, as the greatest opportunity for free expression (the subject was asked to give any factors in his life that had produced happiness or sadness), a frequency count was made of the words of a vivid or superlative nature used by the several groups in this section such as "most wonderful," "desperately unhappy," "very fine parents" or "failure." After the mean number of vivid words for the entire section was found, the mean number of words of a superlative nature that were used specifically with reference to happiness or sadness in the blank was determined. Since this was sometimes difficult to determine precisely, an area entitled "miscellaneous" was used for those more vivid descriptions that did not apply directly to either happiness or unhappiness.

From Table 1, it can be seen that when the mean numbers of vivid words were computed for the several groups, the only strong tendency for the total area appeared in the fact that the *P* group used the vivid words more than the *H* group, although the difference was not significant at the 5 per cent level of confidence. Although the critical ratios were not significant, a trend for both the neurotics and the psychasthenics to use a greater number of vivid words was noted.

The critical ratios for the use of vivid words applied to happiness showed a definite tendency for the controls to use more vivid descriptions in this section. When the critical ratios were computed for the several comparisons made of the number of vivid words applied to sadness, the *N* group used the vivid words significantly more times than the controls. When discussing sadness, the *P* group also used the vivid words more often than the *C* group. The same tendency to use more of the vivid words on the part of the hysterics when compared with the *C* group may be noted from Table 1, although the difference was not significant at the 5 per cent level. The controls also showed that they, to a greater extent than the *H*, *P*, or *N* groups, did not respond in terms of only happiness or sadness. The "miscellaneous" category had to be used a significantly greater number of times for the controls than for the *H*, *P*, or *N* groups. When the psychasthenics and the hysterics were compared, it was seen from the table that in none of the uses of vivid words did the psychasthenics and the hysterics differ at the 5 per cent level of confidence.

The same trend may be noted here as shown previously in the section on attitudes. The controls used more vivid descriptions of happiness than the neurotic group, whereas the *N* group tended to emphasize the unhappy aspects of their development. The controls used the section to express attitudes other than toward happiness or sadness. This might be interpreted as a tendency to interpret the stimuli in a neutral manner or as an attempt to evade the situation indirectly. In the attitude rating section mentioned previously, the *C* group used the high ratings more, whereas the *N* groups tended toward the lower ratings, indicating possibly a lower degree of happiness, mental integration, and adjustment to the present environment, and a more pessimistic outlook for the future.

Another index of overreaction was the number of words used in the section on "Inner Life." This area is important in a counseling situation since it includes opportunities for the discussion of fears, dislikes, daydreams, strong attractions, and night dreams. The mean number of words used by the several groups in this area was computed. From Table 1 it is noted that the mean number of words used by the *N* group exceeded the number used by the *C* group significantly. The mean numbers of words used by the psychasthenics exceeded both the *C* group and the *H* group significantly; the means of the controls and the hysteria group did not differ significantly. These results, then, were compatible with the general thesis offered. The neurotics tended to overreact not only by an excessive use of low ratings and an excessive use of vivid descriptive material when referring to sad or "miscellaneous" experiences, but also by an excessive production of words.

Originality. There were six instances (attitude toward achievement and ability [B7], toward assets [E5], toward working [F4], toward housing [F2], study habits [B6], and skills [E4]) in which the respondent could add material in the blank under "others." This was considered to be some index of originality and initiative. These results, however, were not too clear or conclusive. There was some trend for the neurotics as a group to exceed the controls in the use of this area. Generally, the neurotic subgroups did not show differences that were significant at the 5 per cent level in the use of this "others" area.

More clear-cut evidence of originality of the neurotic group was found by the analysis of some of the content of the blank responses. The use of "miscellaneous" as a classification had to be used more often with the neurotics than with the controls. The neurotics differed significantly from the controls in the amount of material that was so diverse that it could be classified only as "miscellaneous," occurring in the less structured latter half of the blank. For example, in the section "E3" dealing with hobbies and interests, instead of such broad categories as reading and photography, "miscellaneous" had to be used to classify diverse responses such as genealogy, etc. McKinney's [8] previously published study on these groups indicated that the neurotics exceeded the controls in all areas where differences between the *C* and *N* groups were significant. Any possible differences between the neurotic subgroups in the use of "miscellaneous" were not pursued in the present study.

Use of space. Use of space as an index of expressive behavior included the amount of writing between lines and on the backs of sheets and the number of sections omitted. The number answering the various sections was used as an indication of whether the client accepted the situation and dealt with it by writing answers, or rejected it completely with no answer. Data are available on this point from the previously published tables on these groups. In only 5 times out of the 33 times in the previous study in which significant differences were found between the *C* and *N* groups in "number answering" did the neurotics exceed the controls in answering any section. It was evident that the neurotics tended to reject a greater number of blank areas. When significant differences between the *C* group and the neurotic subgroups were examined in respect to number of students answering a given section, the *C* group exceeded the *P* group in all cases with the following exceptions: "Having hobbies," "Sadness" in the Summary section, and "Parental attitudes toward you." Table 2 gives the summarized results. The hysteria group answered the suggested questions more frequently than the controls in the section on "sex history" (fe-

Table 2

Significant Differences in "Number Answering" Section Between the Control and Clinical Groups†

Content of the area	Blank Symbol	*C* and *P* groups CR	*C* and *H* groups CR
Problems			
Attitude and reaction to problem	H3		2.72**
Methods used to overcome problems	H5		2.60**
History			
Compatibility of parents	J1b		4.4**
Parents attitude toward you	J1e	−2.7**	
Occupation of relatives	J2d		3.5**
Have had honors	J4c	2.7**	
Sex history			
Male	J5		4.5**
Female			−2.3*
Sex.exp.and practices			
Male	J5d	5.1**	4.9**
Female		8.1**	3.6**
Attitude toward opposite sex			
Male	J5c	3.4**	7.2**
Female		9.3**	3.5**
Belonged to clubs	J6b	1.9*	4.8**
Held offices	J6e	2.2*	
Attitude changes in social relations	J6g	3.4**	
Had honors in school	J7a	2.1*	3.3**
Attitude changes in regard to school	J7d	2.7**	
Have hobbies	J8c	2.6**	
Church preferences	J10a	2.8**	
Statement of early church training	J10b	2.3*	2.1*
Factors in sadness	J11a	−3.2**	
Factors in happiness	J11b	3.5**	

†J10a, J10b, J11a, J11b have reduced N due to the fact that the summary was not part of the blank in the earlier edition.

Table 3

Significant Differences in the "Use of Space" in Clinical and Control Groups

	C and *N* groups	*C* and *P* groups	*C* and *H* groups	*P* and *H* groups
Atypical Use of Space	−2.2*	− .7	−1.0	− .5
Number of Sections omitted (5 or more)	−1.6	−1.0	− .9	− .1
Number of times of writing between lines (6–10)	−1.6	−1.4	− .0	.9
Number of times used back of sheets (3 or more))	−2.9**	−1.3	−1.2	− .3

males). The differences between the *P* and *H* groups were few and were compatible with the personality patterns of the two groups.

The section on "Problems" seemed one that would reflect differences between the groups in respect to "number answering." It was found that whereas 10 of the psychasthenics omitted this section, more than half of the hysteria group omitted this section entirely, or said in effect "no problem." This is compatible with the known personality of the hysteric to face symptoms but not the problem.

Another use of space that was considered a complete rejection of stimuli was the tendency to omit sections, where section was defined as "D1, D2," etc. No significant differences were noted at the 5 per cent level in any of the groups, but the general trend was indicated in Table 3. The neurotics omitted more sections than the controls as a group. When the *P* group and the *H* groups were compared, no significant trends were apparent. When the *P* and *H* groups were each compared with the controls, the *P* and *H* groups omitted more sections, but the difference was not significant at the 5 per cent level.

Writing between lines was used as a criterion of the atypical use of space whenever more that one or two words were written between lines anywhere in the blank (with the exception of the "Summary"). The results did not indicate any clear-cut reliable trend.

Writing on the back of sheets was also con-

Table 4

Positive Feeling Expression Shown in the Blank by Clinical and Control Groups in Terms of Percentages and Significance

Content of Area	Blank Symbol	*C* group & Misc. *N*. group	*C* group & *P* group	*C* group & *H* group	*P* group & *H* group
Sex Attraction					
Enjoy dating					
Male		33.3** 11.2	33.3* 11.0	33.3 44.4	11.0 44.4
Female	J5c	25.0** 9.6	25.0 6.0	25.0 27.0	6.0 27.0
Specialization (Married, engaged)					
Male		12.1** 2.4	12.1 3.0	12.1** 0.0	3.0 0.0
Female	J5c	11.8** 3.8	11.8 25.0	11.8 13.0	25.0 13.0
Has dates and love affairs					
Male		40.9** 14.4	40.9 86.9**	40.9 100.0**	86.9 100.0*
Female	J5d	50.0 40.5	50.0 81.0*	50.0 93.0**	81.0 93.0
Marriage listed as anticipated goal					
Male		49.0** 23.0	49.0* 27.0	49.0 22.2	27.0 22.2
Female	E7	57.0 43.0	57.0* 25.0	57.0 47.0	25.0 47.0
Filial Affection					
Happiness in enjoyment of home and family	J11g†	11.3 18.9*	11.3* 2.0	11.3 14.0	2.0 14.0
Family mentioned as an asset	E5	27.0 19.0	27.0 15.2	27.0 42.0	15.2 42.0
Positive temperament of parents	J1e	48.0** 26.1	48.0 64.6	48.0 62.0	64.6 62.0
Attitude of parents toward subject					
Love		17.3 17.6	17.3 9.5	17.3 21.0	9.5 21.0
Devotion	J1e	15.8** 6.1	15.8 15.2	15.8 17.0	15.2 17.0
Other relatives positive attitudes toward subject	J2e	11.5 23.3**	11.5 53.2**	11.5 58.0**	53.2 58.0
Friendly Affection					
Roommate described as good-natured	F1	69.7** 50.4	69.7 49.4	69.7 58.4	49.4 58.4
Other positive adjectives applied to roommate	F1	37.5** 17.6	37.5 26.6	37.5 20.9	26.6 20.9
Have many warm friends	J6f	19.2** 8.5	19.2 9.5	19.2 12.5	9.5 12.5
Ability to make friends considered an asset	E5	72.5** 44.0	72.5** 38.0	72.5 54.2	38.0 54.2
Personality traits including					
Individualist		22.6 42.9**	22.6 45.6	22.6 50.0	45.6 50.0
Sociable		61.0** 38.5	61.0 30.4	61.0 45.9	30.4 45.9
Enjoy people	I	83.6** 62.8	83.6 57.0	83.6 83.4	57.0 83.4

Table 4 (Continued)

Content of Area	Blank Symbol	*C* group & Misc. *N*. group	*C* group & *P* group	*C* group & *H* group	*P* group & *H* group
Tolerance, Forgiveness, Understanding					
High respect for religion	J10c†	3.4* 0.6	3.4 38.6**	3.4 50.0**	38.6 50.0
Open-minded and liberal toward religion	J10c†	2.3 1.2	2.3 29.5**	2.3 12.8*	29.5 12.8
Happiness in adjustment to others	J11b†	16.9** 5.1	16.9 15.9	16.9 7.1	15.9 7.1
Service, Cooperation, and Sharing					
Team member	J4b	65.4** 50.9	65.4* 45.6	65.4* 35.5	45.6 35.5
No teams	J4b	2.4 14.7**	2.4 22.8**	2.4 12.5	22.8 12.5
Belonged to clubs	J6b	54.3** 29.5	54.3 36.1	54.3 50.0	36.1 50.0
Camps	J6d	37.7** 18.0	37.7** 13.3	37.7 29.2	13.3 29.2
Happiness in inspiration from others	J11b†	13.0** 2.2	13.0 13.6	13.0 14.3	13.6 14.3
Belonged to organizations	E3	6.2* 2.3	6.2 5.7	6.2 8.3	5.7 8.3
Personality traits include:					
Good-natured	I	67.8** 49.5	67.8 55.1	67.8 58.4	55.1 58.4
Friendly		81.7** 66.6	81.7 68.4	81.7 75.1	68.4 75.1
Leader		30.8** 17.6	30.8 9.5	30.8 41.7	9.5 41.7
Cooperative		56.7** 40.9	56.7 43.7	56.7 45.9	43.7 45.9
Tactful		31.8** 21.9	31.8 22.8	31.8 37.5	22.8 37.5
Happiness					
Enjoy life	J11b	9.0* 2.2	9.0 13.6	9.0 21.4	13.6 21.4
Mean rating on present degree of happiness	G2	6.9** 4.5	6.9** 4.3	6.9** 4.5	4.3 4.5
Personality traits Cheerful	I	45.7** 24.7	45.7 20.9	45.7 25.0	20.9 25.0
Pleasant Anticipation and Success					
Future outlook for happiness					
Male		4.0 2.0	4.0 5.7	4.0 0.0	5.7 0.0
Female	E7	3.0 9.0	3.0 0.0	3.0 8.3	0.0 8.3
No anticipated goal in next ten years					
Male		2.0 9.0**	2.0 1.9	2.0 0.0	1.9 0.0
Female	E7	2.0 12.0*	2.0 3.8	2.0 0.0	3.8 0.0
Expected success in vocation					
Male		81.0** 31.0	81.0** 24.7	81.0** 25.0	24.7 25.0
Female	E7	73.0** 39.0	73.0** 11.4	73.0** 29.2	11.4 29.2

*Level of confidence expressed by the use of asterisks after the percentages has the same significance here as in the other tables.

†Indicates reduced number of summaries.

Table 5

Negative Feeling Expression Shown in the Blank by Clinical and Control Groups in Terms of Percentages and Significance

Content of Area	Blank Symbol	*C* group & Misc. *N*. group	*C* group & *P* group	*C* group & *H* group	*P* group & *H* group
Expressions of Misery, Unhappiness, Loneliness					
Expressions of sadness	J11a†	45.4 68.3**	45.4 34.1	45.4 35.7	34.1 35.7
Depressing housing conditions	F2	2.4 8.5*	2.4 11.4	2.4 8.3	11.4 8.3
Personality traits including					
Often lonely	I	14.4 47.1**	14.4 51.3	14.4 29.2	51.3 29.2
Unhappy		4.3 32.8**	4.3 32.3	4.3 33.4	32.3 33.4
Critical Attitude					
Don't believe in church	J10c†	1.2 5.0*	1.2 27.3**	1.2 28.5**	27.3 28.5
Unfavorable comments on housing	F2	12.5 20.4*	12.5 24.7	12.5 25.0	24.7 25.0
Unsatisfactory working conditions	F4	7.2 5.2	7.2 13.3	7.2 12.5	13.3 12.5
Unsatisfactory qualities in a roommate	F1	16.3 19.0	16.3 11.4	16.3 12.5	11.4 12.5
Personality traits including					
Pessimistic		7.2 24.7**	7.2 20.9	7.2 20.9	20.9 20.9
Cynical	I	9.1 24.2**	9.1 36.1	9.1 29.2	36.1 29.2
Dislike, Hate					
Dislike people in general (including the opposite sex)	J9b	2.4 8.0**	2.4 24.7	2.4 16.7	24.7 16.7
Personality traits including					
Dislike people	I	1.4 10.4**	1.4 9.5	1.4 8.3	9.5 8.3
Enjoy being alone		20.6 40.0**	20.6 41.8**	20.6 41.7	41.8 41.7

†Indicates reduced number of summaries. Level of confidence expressed by use of asterisks after the percentages has the same significance as in Table 1.

sidered an indication of the manner in which the space was used whenever more than one-third of the back of the sheet was written on. From Table 3 a fairly definite tendency was noted for the entire neurotic group to use the back of the sheets more than the controls. This same trend was also evident in the *P* and *H* groups.

It seemed from inspection that the entire neurotic group, as well as the neurotic subgroups, used their space in the atypical manner, i.e., listing or diagramming in an unstructured section. In such cases the subject meticulously answered each suggested topic in turn, and numbered each response to each section. As is shown in Table 3, this was substantiated by our data.

Feeling tone. The feeling tone found in the blank was used as an index of expressive behavior. Using a modification of the classification of feeling tone employed by Sargent in her work on story analysis [11] the blank was analyzed for opportunities for the expression of positive, negative, and anxiety feeling tone. The term "feeling expression" was defined operationally by Sargent as a "word or phrase which a judge can identify as referring to some form of emotion."

Table 6

Anxiety Feeling Expression Shown in the Blank by Clinical and Control Groups in Terms of Percentages and Significance

Content of Area	Blank Symbol	*C* group & Misc. *N.* group	*C* group & *P* group	*C* group & *H* group	*P* group & *H* group
Wish, Desire, Longing					
No night dreams	J4e	13.9** 5.7	13.9** 1.9	13.9 8.3	1.9 8.3
Daydream while studying	B6	15.8 41.0**	15.8 43.7**	15.8 41.7	43.7 41.7
Daydream	J9c	45.3 35.8	45.3 53.2	45.3 41.7	53.2 41.7
Self-criticism, Efforts to Overcome Faults, Embarrassments, Inadequacies, Inferiority, Shyness					
Attitudes toward sensitive matters including					
Facial features	G7	8.2 15.7*	8.2 22.8*	8.2 12.5	22.8 12.5
Health		.5 6.6**	.5 1.9*	.5 4.2	1.9 4.2
Athletic ability		5.8 19.0**	5.8 22.8**	5.8 4.2	22.8* 4.2
Leadership		2.4 12.8**	2.4 19.0**	2.4 12.5	19.0 12.5
Social functions		8.2 21.4**	8.2 30.4**	8.2 12.5	30.4 12.5
Sex control		7.2 13.3*	7.2 15.2	7.2 8.3	15.2 8.3
No sensitive matters		10.6** 2.3	10.6 3.8	10.6 4.2	3.8 4.2
Fears		6.7 17.1**	6.7 24.7**	6.7 12.5	24.7 12.5
Unpopularity with same sex		2.9 17.0**	2.9 17.1*	2.9 16.7	17.1 16.7
Unpopularity with opposite sex		7.7 16.1**	7.7 26.6*	7.7 16.7	26.6 16.7
Ambition		5.3 10.9*	5.3 7.6	5.3 4.2	7.6 4.2
Not well-adjusted to the opposite sex	J5c				
Male		2.9 16.8**	2.9 19.0	2.9 4.2	19.0 4.2
Female		7.9 19.2**	7.9 9.5	7.8 4.2	9.5 4.2
Special dislikes	J9b	2.4 8.0**	2.4 47.5**	2.4 45.9**	47.5 45.9
Independent and self-confident	J11b†	13.5** 1.7	13.5 9.1	13.5 14.3	9.1 14.3
Feel inferior as regards health and physique	C8	5.3 23.7**	5.3 36.1**	5.3 12.5	36.1 12.5
Personality traits including					
Self-confident	I	36.5* 21.2	36.5* 17.1	36.5 33.4	17.1 33.4
Over-conscientious		22.1 32.3*	22.6 36.1	22.6 12.5	36.1 12.5
Shy		16.3 33.3**	16.3 55.1**	16.3 25.0	55.1* 25.0
Lazy		12.9 20.9*	12.9 26.6	12.9 25.0	26.6 25.0
Often procrastinate		26.4 40.4**	26.4 41.8	26.4 41.7	41.8 41.7
Avoid responsibility		14.9 25.2**	14.9 34.2*	14.9 16.7	34.2 16.7
Too serious		18.3 52.8**	18.3 60.8**	18.3 45.9*	60.8 45.9
Sensitive		26.9 57.1**	26.9 72.2**	26.9 50.0	72.2 50.0
Idealistic		27.9 42.3**	27.9 53.2*	27.9 45.9	53.2 45.9
Weak-willed		8.2 24.2**	8.2 47.5**	8.2 12.5	47.5** 12.5
Egocentric		9.6 21.4**	9.6 26.6*	9.6 20.9	26.6 20.9
Self-conscious		38.0 61.9**	38.0 70.0**	38.0 37.5	70.0* 37.5
Retiring		8.6 24.2**	8.6 32.3**	8.6 00.0	32.3 00.0
Easily hurt		14.4 45.7**	14.4 47.5**	14.4 45.9	47.5 45.9
Easily discouraged		16.8 44.2**	16.8 60.8**	16.8 37.5	60.8 37.5

Table 6 (Continued)

Content of Area	Blank Symbol	*C* group & Misc. *N*. group	*C* group & *P* group	*C* group & *H* group	*P* group & *H* group
Dread, Fear, Worry					
Fear of losing prestige	J9a	9.6 22.3**	9.6 13.3	9.6** 0.0	13.3** 0.0
Worry about health	C8	8.2 28.5**	8.2 26.6*	8.2 20.9	26.6 20.9
Fear future	C8	3.3 18.5**	3.3 22.8*	3.3 12.5	22.8 12.5
Have no fears	J9a	12.0* 5.7	12.0** 0.0	12.0 8.3	0.0 8.3
Don't worry about problems	H4	3.8* 0.0	3.8** 0.0	3.8** 0.0	0.0 0.0
Hardly think of health	C8	63.4** 37.6	63.4** 32.3	63.4 62.6	32.3 62.6
Personality traits including					
Anxious	I	16.8 25.7*	16.8 38.0	16.8 29.2	38.0 29.2
Uncertainty, Doubt, Confusion					
Confused and uncertain regarding religion	J10c†	6.2 6.2	6.2 6.8	6.2 7.1	6.8 7.1
Disillusioned with respect to religion	J10d†	7.9 7.9	7.9 27.3*	7.9 14.3	27.3 14.3
Attitude changes with respect to religion	J10d†	56.8 44.7	56.8** 25.0	56.8* 21.4	25.0 21.4
Rating on degree of mental integration	G3	5.8 4.7	5.8 4.2	5.8 6.4	4.2 6.4
Personality traits including					
Restless	I	49.0 65.7**	49.0 68.4*	49.0 62.6	68.4 62.6
Nervous		26.4 63.3**	26.4 64.6**	26.4 62.6**	64.6 62.6
Inhibited		12.5 63.3**	12.5 38.0	12.5 16.7	38.0 16.7
Absent-minded		20.6 30.0**	20.6 39.9*	20.6 16.7	39.9 16.7
Cautious		18.8 29.0*	18.8 32.3	18.8 29.2	32.3 29.2
Moody		27.9 60.4**	27.9 70.3**	27.9 50.0	70.3 50.0
Calm		25.5** 14.7	25.5 13.3	25.5 12.5	13.3 12.5
Easily annoyed		21.1 46.6**	21.1 57.0**	21.1 54.2**	57.0 54.2

†Indicates reduced number of summaries. Level of confidence expressed by use of asterisks after the percentages has the same significance as in Table 1.

Positive feeling tone was defined to include all expressions of pleasure, approaching responses, and all the more socialized emotional attitudes including liking, and love, that could be identified as such in the blank. For example, positive feeling was classified as to sex attraction, filial or friendly affection, tolerance and understanding, service, cooperation and sharing, as well as happiness and pleasant anticipation of success.

There were surprisingly few difficulties in classification, since an inspection of Table 4 shows that only those blank areas were used where there was objective evidence in the blank of the expression of feeling tone. In the present study no attempt was made to check on judgmental reliability because of the fairly objective nature of the classification scheme. Since "pleasant anticipation and success" was considered as an expression of positive feeling, blank areas such as "E7" (future outlook for happiness, expected success in vocation, anticipated goal in the next ten years, etc.) were used.

Various forms of unhappiness, misery, loneliness, critical attitudes, dislike, and hate were classified as negative feeling tone. For example, a critical attitude was expressed in such things as unfavorable comments on housing (F2), unsatisfactory working conditions (F4), and such felt personality traits as pessimism and cynicism (F1).

Expressions of anxiety and conflict were subdivided into expressions of wishes, desires, and longings, expressions of self-criticism and embarrassment, inadequacies, inferiority feelings, shyness, and the expression of dread, fear, and worry as well as the expression of doubt, uncertainty, and confusion. It was postulated that the neurotic group would express more anxiety and negative feeling tone, and less positive feelings than the controls. For example, under the classification "dread, fear, worry," the following were included: fear of losing prestige, (J 9a), worry about health (C8), fear of the future (C8), and such felt personality traits as anxiety (I), etc.

Tables 4, 5, 6 present differences in positive, negative, and anxiety feelings respectively between the groups in various sections of the blank. In only three instances did the neurotics express significantly more positive feelings than the controls. In no instances did the controls show significantly more negative feelings than the neurotics, and in only one instance did the controls exceed the neurotics significantly in the expression of anxiety feelings.

When the controls and *P* group were compared for positive feeling-expression, and significant differences were found, the control with five exceptions exceeded the psychasthenics. In negative feeling-expression, the *P* group exceeded the controls in the instances where significant differences were found. In only one area did the control group exceed the psychasthenic in the expression of anxiety feelings.

The hysterics as a group did not differ from the controls as many times as the psychasthenics did. The only areas where the *H* group exceeded the controls in positive feeling-expression were the same areas in which the psychasthenics exceeded the controls. The hysterics expressed less negative feeling than the psychasthenics when they were both compared with the controls. The hysterics did not differ from the controls in the expression of anxiety to as great an extent as did the psychasthenics.

When the psychasthenics and hysterics were compared, in no area of the blank used in the present classification system did the psychasthenics exceed the hysterics in the expression of positive feelings. Very little difference existed between the two groups in negative feeling expression. The psychasthenics expressed significantly more anxiety feeling in all areas where significant differences were found.

Summary

The Pre-Interview Blank, a standardized case history blank, was used in the present study as a projective device. Differences in the expressive handling of the blank were found between controls and neurotics, as well as between the controls and neurotic subgroups. Such indices of expressive behavior, as *overreaction, originality, use of space,* and *feeling tone* were defined and applied with these results:

1. The entire group of neurotics exceeded the controls in overreaction in using more often the extremes on a rating device, more vivid and intense description, and a greater number of words.

2. The entire group of neurotics exhibited a greater trend toward originality than the controls.

3. In using space, the entire group of neurotics used it more often atypically. They wrote between lines and on the backs of sheets more often and more extensively than the controls. The neurotics tended to reject more areas and to omit more sections than the controls.

4. In feeling expression, the controls expressed significantly more positive feelings, while the entire group of neurotics expressed significantly more negative and anxiety feeling tone.

5. Expressive differences in handling the blank between neurotic subgroups, such as psychasthenics and hysterics, were found.

Received April 14, 1951.

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Performance of Brain-Injured and Familial Mental Defectives on the Bender Gestalt Test

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Since the publication of the Bender Gestalt Test in 1938, its use has become increasingly more widespread, not only to diagnose organic brain damage, but schizophrenia and certain behavior disorders as well. It is currently being employed as one of the diagnostic tools by clinicians, in such places as the Veterans Administration, armed services, and school systems. However, Billingslea [3, p. 2] points out that the data available on the Bender Gestalt are not impressive and that statistical treatment of the data furnished by Bender and Hutt [4] is lacking because of the qualitative nature of their investigations.

In her chapter on the use of the Bender Gestalt Test with mental defectives, Bender [1, p. 149] indicates that the study of the visual motor Gestalt function shows that the problem of mental deficiency is not a simple one. If we assume a simple slowing up or simplification of the maturational process in a uniform way, we would expect a stronger and simpler Gestalt, such as we find in the younger normal child. She goes on to say that although this is frequently found, some defectives also reveal signs of aphasia as well as personality disturbances.

Bender suggests that the test will differentiate between the hereditary or culturally-caused mental deficiency from that produced by trauma, from either disease or injury. However, she does not offer any data except a few case studies. The present experiment recognizes the need for a quantitative investigation of differential responses of brain-injured and non-brain-injured defectives on the Bender Gestalt.

Procedure

The 322 subjects used in the experiment were composed of 146 females and 176 males. Half of the subjects had been diagnosed as having organic brain damage and half of the subjects were diagnosed as having a familial or hereditary etiology. The brain-damaged subjects were composed of patients having Little's Disease, birth injury, or damage due to infection (largely postencephalitis and congenital syphilis). These diagnoses were based on case history and a thorough medical and neurological examination. A diagnosis of familial etiology was based on a history of at least one parent being feebleminded; in most cases, at least one sibling being retarded; and the absence of trauma in the case history.

The matched pair technique was employed so that a familial subject was paired with a brain-injured subject having the same mental and chronological age. The mental age was based upon the Revised Stanford-Binet Form L or M administered within the preceding year. The maximum difference in mental age between two paired individuals was six months. The maximum difference in chronological age between any two paired individuals was one year. The *t*-tests performed between the mental age of the two groups and the chronological age of the two groups were not significant. The range in mental age was from 4 to 11.5 years, with a mean of 6.25 years for the males and 3 to 12.16 years, with a mean of 6.67 years, for the females. The chronological ages for both groups were approximately equal, ranging from 7 years to 61 years, with a mean of 30.1 years for the females and 30.6 years for the males. The subjects were administered individually, the standard forms utilized by Bender [1, p. 4]. Although some of the brain-damaged subjects had a motor involvement of the lower extremities, no subject was used who presented a motor handicap of the upper extremities. An 8½" x 11" piece of white un-

lined paper was placed in front of the subject and the first figure was placed at the top of the paper. He was asked, "Draw me a picture that is just like this one." Some of the subjects required additional urging, but for most cases the administration was standard.

Results

Bender suggests [1, p. 73] that patients with organic brain damage tend to reproduce drawings in a more primitive manner than do normal individuals. She presents tables [1, pp. 114-130] describing the types of figures reproduced by some 330 normal subjects ranging in age from 3 to 15 years. It was found that the ability to reproduce drawings is a developmental type of process, and that any single reproduction can be grouped into one of six or seven qualitative levels of proficiency.

Bender's data were utilized in obtaining a quantitative measure on the test. The mean age for each level of proficiency was computed in order to score the accuracy of the drawings in the present experiment. For example, if a subject reproduced figure VI with two lines crossing at right angles, he was given a score of 7.67 on that figure because it was found by Bender that the average child of 7 years and 8 months reproduces a similar drawing.

After the females had been tested, it was found that most of the subjects with mental ages below four years were not able to reproduce the drawings beyond the scribble stage. For that reason the minimum age of the male subjects to be used was raised from three to four years. Hence, the male and female groups were not considered comparable. A Student's *t* between the female brain-injured and the male brain-injured subjects' mental ages was 2.32 which was significant at the 2 per cent level of confidence. Therefore, the male and female subjects could not be grouped together.

Since it is Bender's finding that organically brain-damaged patients produce more primitive drawings, we should expect a difference in the level of proficiency between the present endogenous and exogenous subjects. The accuracy scores on each of the nine figures were totaled, and this score was used to compare the performance of the two groups. The t-test between the brain-injured and non-brain-injured male subjects was 4.62, which is significant at less than the 1 per cent level of confidence for 87 degrees of freedom. The *t*-test between the brain-injured and non-brain-injured females was 2.53, which is significant at less than the 2 per cent level of confidence for 72 degrees of freedom. This suggests that the mental defectives who suffer from some type of brain injury do reproduce figures less well than do mental defectives of the same mental age with a familial etiology.

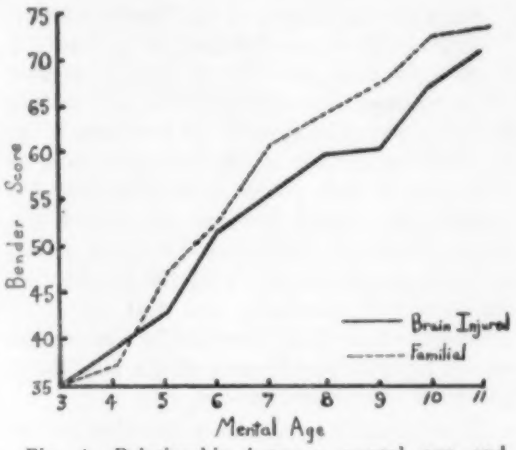

Fig. 1. Relationship between mental age and Bender Gestalt accuracy

It will be seen, however, that differentiation between brain-injured and non-brain-injured on this particular test takes place above the mental age of five years. Figure 1 pictures the relative performance of each group and the relationship of level of proficiency to mental age.

The Pearson correlation between the mental age and Bender Gestalt score for the male brain-injured group is .64, for the familial male group .76; for the brain-injured females .74, and for the familial females .80.

It was felt that an investigation of any differences in the level of performance on the different figures might reveal the specific types of figures that offer the most difficulty for the brain-injured. However, since the scoring on the figures was somewhat qualitative and may not have been comparable for all figures, z scores (normalized scores) were used to render the scoring equal on all eight figures.

As has been noted before, the mental age range was from 3 to 12.16 for the females and 4 to 11.5 for the males. Although the females

have a lower limit, the mean mental age for the females was 5 months above that for the males. Because of these differences in mental age between the sexes it would appear that a comparison of the two groups would be of questionable validity. However, since the average Bender Gestalt score for the females is above the mean score for the males, it will be assumed that this difference is due to the different mental level and not due to any basic sex differences.

Thirty-three pairs of the matched subjects (33 brain-injured and 33 familial) were randomly selected and their normalized scores on each of the eight figures were treated by an analysis of variance. Table 1 presents the summary table of the analysis of variance. This

Table 1

Analysis of Variance of Performance on 8 Figures by Brain-Injured and Non-Brain-Injured

Source	*df*	Sum of Squares	Mean Square	*F*-test
Etiology	1	46.955	46.955	9.425**
Figures	8	4.554	.569	
Interaction	8	6.100	.763	
Individuals	576	686.110	1.191	
Total	593	743.719		

**Significant at less than .01 level of confidence.

analysis bears out previous *t*-tests that the familials perform significantly better than the brain-injured. However, this difference is found in all of the figures, i.e., the performance of both groups on the different types of figures is relatively the same.

It has been noted by Bender as well as by many other authors, [1, p. 149] that it is not the accuracy per se in figure reproduction that is important in differentiating between brain-injured and non-brain-injured, but manner of approach, type of reproduction, etc., that reveal the "real" impairment of the brain-injured. Because of this, it was felt that χ^2 tests based on the characteristics frequently observed in the brain-damaged might show significance for the brain-injured and non-brain-injured groups. Table 2 gives the results of χ^2 tests based on several suggested characteristics of brain-injured patients.

Of the eight characteristics compared, only those of reversals, repetition of parts, and the use of lines instead of dots were significant.

Table 2

Comparison of Brain-Injured and Familial

Characteristics	χ^2
1. One or more complete reversals (less Fig. III)	9.70**
2. Parts present but incorrectly placed	.70
3. Parts omitted	1.75
4. Parts repeated (closed figures)	4.59*
5. Use of numbers, stars, etc.	.00
6. Use of lines on Fig. V instead of dots	5.64*
7. Two or more erasures	.77
8. Elevation or repression of Fig. I and II	2.22

*Significant at less than .05 level of confidence.
**Significant at less than .01 level of confidence.

Discussion

The curves in Figure 1 picturing the relation of the Bender Gestalt accuracy score to mental age are quite similar to those found by the present author [2, p. 505] on reproduction of figures on the marble board. It would appear that many of the tests in use today to diagnose organic brain damage rely upon tasks which are developmental in nature, that is, the ability to perform the task is highly correlated with mental age. However, due to a brain injury, the performance in the perceptuo-motor area is depressed on items which tap that area. This lowered ability, in regard to accuracy, is meaningful only when compared to a normal individual having the same mental age. Because of this, a diagnosis on the basis of accuracy from the record of a single subject is difficult, and normative data need to be obtained.

As mentioned before, the differentiation (in terms of accuracy) between the two groups breaks down below five years mental age. Since most of the subjects were adults, the lower level of mental ages also means lower IQ. Because clear-cut cases having a hereditary or cultural etiology seldom exhibit such marked mental retardation, it is probable that the imbeciles diagnosed as familial frequently had some organic involvement which would result in a negation of the differences produced by the test at other levels.

Several characteristics were noted by the author which were peculiar to the brain-injured but not frequent enough to be borne out when tested by the χ^2 technique. Two of these were mirror writing and difficulty in the formation of angles. For some reason Figure 3 was re-

versed as frequently by the familial group as by the brain-injured group.

In conclusion, it might be said that the Bender Gestalt Test is a useful instrument to add to the armamentarium used by the clinical psychologist for diagnosing brain injury in mental defectives. It should prove useful for mental ages of five years to twelve years. However, in scoring for accuracy, one must take into account the mental level before judging the quality of the drawing.

Summary

1. One hundred and sixty-one brain-injured mental defectives were matched for mental and chronological age with an equal number of defectives having a familial or hereditary etiology. The Bender Gestalt Test was administered and scored for accuracy.

2. The familial group were significantly more accurate in their reproductions than the brain-injured.

3. The Pearson correlations for accuracy and mental age ranged from .64 to .80.

4. Of the eight characteristics treated by the chi-square technique, reversals, parts repeated, and the use of lines instead of dots were found to occur significantly more frequently in the brain-injured.

Received April 24, 1951.

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An Anxiety Index and an Internalization Ratio for the MMPI

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Anxiety is a basic psychological concept and its evaluation is important both in describing behavior and in understanding the psychodynamics involved in this behavior. The psychologist in the hospital or clinic is constantly called upon to make judgments of the amount or degree present in a patient.

A question that the therapist frequently asks is, "Does this patient have enough anxiety to work with?" This expresses clearly the belief that success in treatment is somehow related to anxiety. A patient who refers himself for treatment because of "nervousness and tension" is generally considered to offer a more favorable prognosis than a patient sent by the court. The latter may have no complaints referable to anxiety but comes in because his attendance is a requirement for his probation.

In terms of diagnosis such statements are often made: "he doesn't have enough anxiety to be a real psychoneurotic," or "he has too much free anxiety to be a good conversion hysteric." The reaching of agreement as to diagnosis may be in part, then, a function of agreement as to how much anxiety is present and how this anxiety is directed.

Unfortunately the measurement of anxiety is largely left to clinical judgment and to inference from psychometric data. Although dozens of tests are used by the psychologist, there have been very few attempts to objectify and quantify such measurement. By observing the subject's behavior in the clinic or test situation, or by a consideration of test scores obtained, the psychologist must make an estimate of the amount of anxiety shown. This estimate is for the most part dependent on the clinician's experience and his skill in extracting out of the patient's behavior some judgment of the degree of anxiety present.

Next, the estimate must be communicated. This is usually done with adjectival phrases such as: "shows a marked degree of anxiety," "there was little free anxiety," and the like. Thus, even though the assessment of the anxiety may be accurate enough, fineness of discrimination will be lost on such a gross and variable scale.

It would clearly be an advantage to have some objective measure of anxiety which could be reported in a single numerical value. This paper will offer a suggestion as to how this aim may be accomplished with a widely used psychometric device, the Minnesota Multiphasic Personality Inventory.

On the MMPI no single scale has appeared to measure anxiety. The clinician must estimate the amount or degree present by an examination of the profile configuration; this inference is then reported by the use of some unprecise phrase such as noted above. Thus the objectivity inherent in the test's scores is lost.

There have been, however, some attempts to derive an objective score. Modlin [11] has suggested the use of the combined scores of *Hs, D,* and *Hy* as an anxiety score (*A* score); this had previously been used by Ruesch [16] as a neurotic score (*N* score). Gough [6] had also used the mean of this combination of the neurotic triad (*Nt* score) as a measure of neuroticism, but reported that it proved less discriminating than *D* alone, in addition to obscuring important interrelationships among the scales.

It appears clear, then, on both empirical and theoretical grounds, that a simple additive sta-

[1]Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

tistic derived from the neurotic triad will not show the interrelationships of the three subscores, nor their full implication as a reflection of anxiety. Consider three hypothetical cases and their MMPI *T*-scores:

a. *Hs* 80, *D* 70, *Hy* 60
b. *Hs* 70, *D* 60, *Hy* 80
c. *Hs* 70, *D* 80, *Hs* 60

In all three cases the mean will be 70, yet the clinician would probably rank them in terms of anxiety from most to least as "c," "a," and "b."[2]

Anxiety as used in this paper is that condition attributed to patients complaining of subjective feelings such as tension, nervousness, apprehension, fear, etc., which is generally accompanied by somatic concomitants—vertigo, dyspnea, pre-cordial pain, gastric distress, headache, and the like. Anxiety is not necessarily equated with neuroticism since it might be argued logically that the three cases above are equally neurotic. Thus the person with free-floating anxiety is conceived to have more anxiety in this sense than the hysteric who is expressing his illness in conversion symptoms. The latter case may be either more or less neurotic than the first.

In order to obtain a measure of anxiety from the Multiphasic we might consider the profile of the person showing the most anxiety, the anxiety neurotic. This profile is generally "neurotic,"[3] showing a bimodal curve with a peak score on *D* and a secondary elevation on *Pt*. A recent paper by Hovey [10] demonstrates the specific anxiety pattern very clearly; in it there is a generalized rise on the neurotic triad with *D* higher than *Hs* and *Hy* and a subpeak on *Pt*.

Hovey contrasted the average profiles of three diagnostic groups: dissociative-conversion, somatization, and anxiety reaction. In the first group 62 per cent of the cases had the pattern typical of the group average, in the second 41 per cent, while only 23 per cent of the anxiety cases conformed to the pattern. This suggests that the clinician will be less successful in inferring anxiety from an inspection of the profile configuration in the latter group. Yet the elevations on the neurotic triad and *Pt* may be highly diagnostic even though they may not always show the typical relationship. In Modlin's sample of 54 cases of free anxiety, 40 per cent had *D* as the highest score, 29 per cent *Hs*, 15 per cent *Hy*, and 6 per cent *Pt*. For 28 cases of combat anxiety the percentages were: *D* 43 per cent, *Hs* 14 per cent, *Hy* 14 per cent, and *Pt* 7 per cent.

The index of anxiety which is here proposed includes the scores on these four scales and utilizes three basic features of the anxiety profile: a general rise on the neurotic triad, the anticlinal relation of *D* to *Hs* and *Hy*, and the secondary rise on *Pt*. It is defined so as to yield an expected value of 50 for a normal record and to give the highest values to profiles of the type described by Gough and Hovey. The formula is:

$$AI = \left[\frac{Hs + D + Hy}{3}\right] + \left[(D + Pt) - (Hs + Hy)\right].$$

It can be seen that profiles with *D* in a synclinal position, the so-called "*D* valley" [see 6, p. 30 ff.], will generally have a negative number on the second part of the formula. This will result in a lower value than that obtained for curves with *D* peaks even though the average of the neurotic triad be the same. By taking the relation of these scales into account the difficulties posed in the three hypothetical cases mentioned above are avoided. And yet cases which do not have the typical curve shape can still be assigned a quantitative measure of anxiety so that the problem noted in Hovey's discussion may be overcome.

In practical clinical use of the Anxiety Index (*AI*) it has been found helpful to consider another relationship which, although closely allied to this concept, emphasizes a somewhat different aspect of the profile. This is a ratio obtained by summing the three complaint, mood, or feeling scales: *Hs*, *D*, and *Pt*; and dividing by the sum of the three behavior or

[2] A failure to consider these relationships led Shoben [15] to accept *T*-scores of over 65 on the neurotic triad regardless of pattern as an indication of anxiety. This may have been an important factor in his failure to confirm the results of Rashkis and Welsh [13] in their study of anxiety on the Wechsler scale.

[3] See Gough [6] for a discussion of various MMPI diagnostic patterns.

character disorder scales: *Hy, Pd,* and *Ma.* This may be called the internalization ratio (*IR*) and the formula is:

$$IR = \frac{Hs + D + Pt}{Hy + Pd + Ma}.$$

This will obviously yield a theoretical value of 1.00 in normal cases. Subjects who tend to have many somatic symptoms and subjective feelings of stress—who "internalize" their difficulties—can be expected to obtain values above 1.00. Those who tend to act out and "externalize" their conflicts will obtain a ratio below 1.00.

These two statistics, *AI* and *IR,* have been computed from the group averages[4] given in several different studies and are presented in Table 1 and Table 2. The profile codes [9, 18, 19] for the groups given in these tables are set forth in Table 3 for the benefit of those who wish to compare the curve configurations with *AI* and *IR.*

In Table 1 the highest *AI* is shown by Gough's severe psychoneurotic group which consisted primarily of cases with an anxiety diagnosis.[5] This is closely followed by Guthrie's [7] anxiety state and depression groups. Hovey's anxiety reaction is next with Schmidt's [14] psychotic group showing a somewhat lower elevation. The lowest scores are obtained by Hovey's dissociative-conversion reactions and Schmidt's normals. We then find Gough's normals, Schmidt's mild psychoneurotics, and Guthrie's manic group.

In Table 2 the *AI* is highest for Capwell's [3] delinquent girls, but this value is lower than for all but the mild neurotics, inadequate personality, manic, somatization, and conversion groups of Table 1. Fry's [5] prisoners run slightly higher than his college groups but again the *AI* is lower than most of the psychiatric groups. The college groups cluster very closely about 50 like the previously noted normals.

The *IR* values in Table 1 follow *AI* very closely but some interesting findings may be noted. Guthrie's anxiety state group leads his depression group in *AI* but the latter has a higher *IR*; this seems consistent with the clini-

Table 1

The Anxiety Index (*AI*) and the Internalization Ratio (*IR*) Computed from Mean Scores Given in Certain Studies of Psychiatric Groups and Including Controls Where Cited

Investigator	Description of Group	*N*	*AI*	*IR*
Gough [6]				
	Psychoneurosis, severe	57	102	1.26
	Psychopathic personality	21	79	1.11
	Psychosis	22	77	1.13
	Psychoneurosis, moderate	24	66	1.08
	Psychoneurosis, mild	12	57	1.09
	Normal	27	47	.98
Guthrie [7]				
	Anxiety state	12	97	1.19
	Depression	7	93	1.25
	Paranoid	15	68	.97
	Psychopath, asocial type	25	67	.88
	Inadequate personality	19	53	1.08
	Manic condition	11	50	.78
Hovey [10]				
	Anxiety reaction	60	87	1.21
	Somatization reaction	105	53	1.10
	Dissociative—conversion react.	34	42	1.00
Schmidt [14]				
	Psychotic	13	85	1.13
	Psychoneurosis, severe	64	74	1.14
	Constitutional psychopathic state, inadequate personality	11	65	1.02
	Constitutional psychopathic state, sexual psychopathy	7	65	1.00
	Psychoneurosis, mild	26	50	1.12
	Normal	98	42	.99

[4]It is obvious that the average *AI* computed from group means will be exactly the same as that calculated by averaging the individual *AI*'s. This is not necessarily so for *IR* since the above relation will be true for ratios only under certain conditions.

The difference between average ratios computed collectively and those computed individually will be slight if the individual ratios are relatively symmetrical about 1.00. If there is a preponderance of individual ratios above 1.00, the use of group means results in an average higher than that obtained when individual ratios are averaged. A lower average will result when most of the individual ratios fall below 1.00. The writer is indebted to Dr. Robert C. Tryon, University of California, for his assistance in this regard and also for suggesting alternate forms for *AI* which may be more easily computed:

(a) $1.33\ D + 1.00\ Pt - .66\ Hs - .66\ Hy$

(b) $1/3\ [4\ D + 3\ Pt - 2\ (Hs + Hy)]$

[5]Personal communication.

Table 2

The Anxiety Index (*AI*) and the Internalization Ratio (*IR*) Computed from Mean Scores Given in Certain Studies of Non-psychiatric Groups

Investigator	Description of Group	*N*	*AI*	*IR*
Brown [2]				
	Male college students, original	155	41	.96
	Male college students, industrial	66	46	.98
	Male college students, medical	82	48	.92
	Male college students, general college	176	52	.94
	Female college students, original	155	42	.95
	Female college students, sophomores	110	48	.92
	Female college students, teacher's college	185	47	.92
	Female college students, general college	366	49	.90
Capwell [3]				
	Delinquent girls	99	61	.88
	Nondelinquent girls	89	48	.99
Fry [5]				
	College students, male veteran	86	57	.96
	College students, male non-veteran	35	55	.93
	College students, male total	121	56	.95
	College students, female	115	51	.92
	State prison inmates, male Negro	22	54	.84
	State prison inmates, male white	76	60	.89
	State prison inmates, male total	98	58	.88
	State prison inmates, female	109	59	.88

cal impression of depressed patients who show "internalization" to a high degree. Guthrie's manics and Schmidt's mild neurotics both have the same "average" *AI* of 50, however the former shows a very low *IR*—the most "externalized" of all the groups presented—while the latter has a slightly elevated *IR*.

The groups which have achieved a stability between internalization and externalization in the sense of an *IR* close to 1.00 are the two normals, Guthrie's paranoids, Hovey's dissociative-conversion, and Schmidt's two constitutional psychopathic groups. But at the same time these stabilized groups show distinguishing differences in *AI*. Hovey's group is characterized by a lack of anxiety, as are Schmidt's normals, while the paranoids and psychopathic states show a mild rise on *AI*.

From Table 2 it can be seen that the prisoners and delinquents externalize more than the college students although the former's anxiety

Table 3

Profile Codes [9, 18, 19] of the Psychiatric Groups Given in Table 1

Investigator	Description of Group	Profile code
Gough [6]		
	Psychoneurosis, severe	2* 1 8 7 3"4 6' 5 9
	Psychopathic personality	2 1 8 3"4 6' 7–9 5
	Psychosis	2 1"3 8 6 7' 4 9–5
	Psychoneurosis, moderate	2 3 1' 7 4–8 9 6 5
	Psychoneurosis, mild	3 1 2'–6 4 7 8 9 5
	Normal	3 2 5/1 9 4 8 6 7
Guthrie [7]		
	Anxiety state	2" 7 8 1' 3 9 4–5 6
	Depression	2''' 7 6 1 3 8–4 9 (5)†
	Paranoid	6 8' 4 7 9 2–1 3 (5)†
	Psychopath, asocial	4' 9 8 2 7–3 6 1 5
	Inadequate personality	1 3' 2 7 8 9 4–5 6
	Manic	9' 4 8–6 7/1 3 2 (5)†
Hovey [10]		
	Anxiety reaction	2 1"7 8 3' 4 6 9 5
	Somatization reaction	1' 3 2–7 4 9 8 5 6
	Dissociative—conversion reaction	3 1' 2–9 4 7 8 5/6
Schmidt [14]		
	Psychotic	2" 8 6 1 7 3' 4 9–5
	Psychoneurosis, severe	2 1"3 7 8' 4 6–9 5
	C.P.I., inadequate	1 3 2 8 6 4' 7 9–5
	C.P.I., sexual psychopathy	8 5 6' 3 2 4 7 1 9
	Psychoneurosis, mild	1 3 8 2 7–6 4 9/5
	Normal	6/ 7 1 8 9 4 5 3 2

†Mf not given in original study because both sexes included.

is slightly higher.

These tables afford some evidence that the statistics proposed will in most cases follow the clinical expectations when the mean *T*-scores for various groups are considered. High *AI* and *IR* values will be seen for cases of anxiety and depression and other groups with anxiety as a prominent clinical feature. A low *AI* may be expected in hysteria with *IR* at the average. And a low *IR* with low or only slightly elevated *AI* would fit the "acting out" behavior pattern of manics, psychopaths, prisoners, and delinquents.

The *AI* and *IR* in Relation to Therapy

In order to see how the proposed statistics will measure therapeutic effects a number of studies, of individual cases and of groups, utilizing different methods of treatment, will be considered.

A study by Hales and Simon [8] compared the MMPI profiles of twenty schizophrenic patients in a Veterans Administration hospital who were treated by insulin shock therapy. Ten patients showed improvement "ranging from moderate response to complete remission" and ten "failed to show any improvement whatsoever." The anxiety index has been computed from the mean *T*-scores reported for the two groups on the tests administered before therapy. For the improved group *AI* is 75; for the unimproved, 63. Thus the improved group tended to show more anxiety before therapy, as measured by the index, than the unimproved. The values for *IR* are 1.05 and 1.08 suggesting that both groups were fairly well "settled down" in their illness.

Further confirmation of the predictive value of *AI* may be seen in a recent study by Carp [4]. He compared the MMPI profiles of schizophrenics in a Veterans Administration hospital before and after insulin shock therapy, and in general his results support the findings of Hales and Simon. There were 37 cases of which 15 were judged to be improved and 22, unimproved. The anxiety index and internalization ratio have been computed for each group from the mean *T*-scores for the pretreatment tests. For the improved group the values are: $AI = 83$, $IR = 1.05$; for the unimproved: $AI = 58$, $IR = .94$. In this study the improved patients showed both more anxiety and more internalization than the unimproved.

Rashkis and Shaskan [12] have reported on 22 psychiatric patients treated by group therapy in an Army hospital. They were given the MMPI both before and after six weeks' treatment. Group mean *T*-scores are not given in the article, but two cases are cited and scores reported. Both individuals were diagnosed as "anxiety state, severe, chronic." For the first case *AI* before therapy was 98 and this dropped to 61 after treatment; *IR* before was 1.12 and afterwards, .88. The second case showed the following values before and after: *AI* 107 to 62, *IR* 1.30 to .86. Although the authors had complained that the inventory had not measured "such clinical features as guilt, anxiety, or the expressions of the other emotions which group treatment is probably most successful in treating," it can be seen from the above values that the index and ratio do seem to be of value in quantifying such clinical change.

A severe psychoneurotic patient with anxiety as a primary symptom was seen by Andersen [1][6] for testing seven days before and five days after a prefrontal lobotomy. The MMPI was administered on these occasions and also four times subsequently at ten-day intervals. The *AI* values are: preoperative 149, postoperative 103, 142, 119, 126, 114. For *IR*: preoperative 1.33, postoperative 1.21, 1.38, 1.32, 1.24, 1.08. There was an initial drop following the operative attack, but the anxiety rose to the previous level again. Toward the end of the testing periods there was some decline. These values seem to follow the clinical changes reported and reflect the high level of anxiety and internal stress noted in this patient.

A further study may be of interest although no treatment is reported. In a study by Wauck [17] the MMPI profiles of 80 diagnosed schizophrenics from a state hospital were used. The anxiety index for the total group is 73 and the internalization ratio 1.01. A subgroup of 31 paranoids shows the *AI* to be 64 and *IR* to be .98; these are very close to Guthrie's paranoid group which obtained $AI = 68$ and $IR = .97$. The total group was also subdivided into three age groups: ages 15 to 29

[6] This case has also been discussed by Welsh [19].

($N = 33$), 30 to 39 ($N = 31$), and 40 to 53 ($N = 16$). The *AI* values are: 81, 69, and 60. For *IR* they are: 1.05, 1.00, and 1.00. Although *IR* stays approximately the same, there is a clear tendency for *AI* to decrease in the older groups. This seems consistent with the clinical findings that younger schizophrenics generally respond better to treatment, and this may be reflected in the anxiety index.

The evidence is consistent in showing that a more favorable prognosis for treatment may be predicted for a high *AI*, other conditions being equal. It is also clear that clinical changes during treatment may be reflected by both the *AI* and *IR* values.

In order to ascertain the distribution of *AI* and *IR* for psychiatric populations, data were obtained from three sources: a Midwest Veterans Administration hospital (hospital A) and two West Coast VA mental hygiene clinics (clinic B and clinic C). In one of the latter (clinic C), information as to therapeutic outcome was available and will be discussed later. The records of white male patients only were utilized in this study. The actual distributions of *AI* are summarized in Table 4 and *IR* in Table 5.

In hospital A for 60 patients the range of *AI* was from 27 to 154 with a mean of 82 and a standard deviation of 28. The *IR* ranged from .78 to 1.54 with a mean of 1.12 and a SD of .23. A product-moment coefficient of correlation calculated between *AI* and *IR* was + .58. The magnitude of the *r* shows that while the two are indeed related, they may be measuring aspects of the profile sufficiently different to make them both useful. It may be noted that the coefficient of alienation for the above *r* would be .81.

Table 4

Distribution of *AI* for Three Psychiatric Populations

AI	Hosp. A	Clinic B	Clinic C: much imp.	Clinic C: some imp.	Clinic C: no imp.	Clinic C: not rated
160–179		1	1			
140–159	2	1	1			2
120–139	6	6	0	6	2	8
100–119	8	7	2	10	3	3
80–99	12	14	3	4	3	18
60–79	14	12		5	4	11
40–59	13	11		3	2	13
20–39	5	2			1	3
0–19		1				
N	60	55	7	28	15	58
Mean	82	82	111	98	85	81
SD	28	31	27	27	27	31

Table 5

Distribution of *IR* for Three Psychiatric Populations

IR	Hosp. A	Clinic B	Clinic C: much imp.	Clinic C: some imp.	Clinic C: no imp.	Clinic C: not rated
1.60–1.69			1	1		1
1.50–1.59	1	1	0	1	1	1
1.40–1.49	5	5	0	0	1	3
1.30–1.39	8	8	3	5	0	4
1.20–1.29	8	6	2	6	2	10
1.10–1.19	6	13	0	9	3	10
1.00–1.09	15	8	1	4	4	15
.90–.99	8	9		1	3	11
.80–.89	8	2		1	1	3
.70–.79	1	2				
.60–.69		1				
N	60	55	7	28	15	58
Mean	1.12	1.14	1.32	1.20	1.13	1.13
SD	.23	.20	.15	.19	.18	.18

In clinic B with an *N* of 55 the range for *AI* was somewhat more extreme, 13 to 171. The mean is identical at 82 although the SD of 31 is a few points greater. The lowest *IR* was .65 and the highest 1.58; this range is again slightly more extreme than the hospital group although the mean of 1.14 is practically identical. The SD of .20, however, is not quite so large. The product-moment *r* for *AI* and *IR* in the clinic group is very similar to that obtained for the hospital: $r = +.63$.

In clinic C there were available 108 MMPI records on patients tested routinely on intake during a six-month period. Not quite half (50) had received treatment at the clinic for a long enough period so that judgment as to therapeutic gain was possible. This treated group was subdivided into three subgroups on the basis of the estimate of treatment progress given by the therapist in the closing summary. These subgroups are: much improved, $N = 7$; made some improvement, $N = 28$; no improvement or got worse, $N = 15$.

The 58 unrated patients are listed separately and it may be seen that the range, mean, and SD are very similar to those of hospital A and clinic B.

On the basis of the evidence advanced so far it might be anticipated that the subgroups making improvement in therapy would have higher *AI* and *IR* scores than those patients who did not improve. That such predictions are confirmed may be seen from Table 4 and Table 5. The *much imp.* group exceeds the other two on both *AI* and *IR*, and the *some imp.* group had higher scores than the *unimp.* All three of the treated subgroups exceed the unrated group.

Table 6

The Number and Percentage of Three Subgroups of Clinic C Exceeding Certain Cutting Scores on *AI* and *IR*

		AI above 82		*IR* above 1.14		Both *AI* above 82 and *IR* above 1.14	
Subgroup	*N*	*N*	%	*N*	%	*N*	%
Much imp.	7	7	100	6	86	6	86
Some imp.	28	19	68	21	75	16	57
No imp.	15	7	47	7	47	5	33
Total	50	33	66	34	68	27	54

An analysis of variance carried out on the three subgroups and the unrated group gives *F*-ratios of 2.92 for *AI* and 2.66 for *IR*. The *F*-ratios are both significant at the five per cent level of confidence.

The amount of overlap among the different subgroups may be seen by referring to Table 4 and Table 5. In addition Table 6 has been compiled to show the number and percentage in each subgroup which exceeds an *AI* of 82 and an *IR* of 1.14 (these are approximately the means of these two values for hospital A, clinic B, and the unrated cases of clinic C). In every case the *much imp.* has a greater percentage falling above these cutting scores than the other two groups, and the *some imp.* percentages exceed the *unimp.*

We may combine the *much imp.* and *some imp.* groups and count the number over the cutting scores as hits while considering those in *no imp.* above these scores as misses. In the case of *AI* we will be successful 68 per cent of the time, for *IR*, 70 per cent, and for both considered together, 64 per cent. In terms of significance as computed by chi square the *AI* passes the .10 level, *IR* the .05, while the combination falls between .20 and .10.

This study confirms the findings noted in previously published accounts and suggests that *AI* and *IR* may be useful as predictors of success in therapy in addition to affording an objective measure of anxiety.

Evidence for the usefulness of the two measures in a normal population is afforded by an unpublished study of graduate students.[7] For forty subjects the mean *AI* was 63 with a standard deviation of 16; the mean *IR* was 1.03 with a standard deviation of .14. The product-moment correlation between *AI* and *IR* was +.17. The students showed much lower scores than the psychiatric populations and the correlation between the two statistics is not of the same magnitude as that obtained in the former groups.

The students had been rated on a five-point scale by nine judges on a number of behavior traits and the following significant product-moment *r*'s obtained: Self-confidence and *AI*, —.44; Poise and *AI*, —.29; Poise and *IR*, +.33. An adjective check list had also been used and the number of times each adjective had been checked as present in the subject by the judges was correlated with the measures. Significant correlations are: Anxious and *AI*, +.25; Spontaneous and *AI*, −.31; Spontaneous and *IR*, −.45.

These findings seem to indicate that the proposed measures will be associated in a normal population with anxiety and related behavior in the same direction that would be predicted from the results of their use with psychiatric groups.

One final bit of evidence may be adduced to show that the Anxiety Index is measuring what clinicians consider to be anxiety. Prior to the development of the Index ten judges had gone through the MMPI and checked the items they felt to be related to anxiety. There were eight items upon which all ten judged agreed, six items had nine agreements,

[7] These data were made available through the courtesy of Dr. Donald W. MacKinnon, Director of the Institute of Personality Assessment and Research, University of California.

and seventeen items eight agreements. These 31 items were made to constitute a scale. Fifty new records were obtained from clinic C and this scale scored and correlated with the proposed measures. Tetrachoric *r*'s obtained are: *AI*, +.91; *IR*, +.36.

Thus it is apparent that such an anxiety key might well be substituted for the Anxiety Index as a measure of anxiety. But *AI* has two important advantages: first, no additional scoring is necessary for its use; second, *AI* can be used when the answer sheet is not available since it can be calculated from the scale *T*-scores alone.

Summary

From a consideration of profile configuration seen in MMPI records of psychiatric patients characterized by anxiety as a prominent clinical feature, a statistic—*AI*—has been proposed as an index of anxiety. Related to this is a concept of internalization for which another statistic is suggested, the internalization ratio or *IR*. Evidence is offered that these two measures may be of use in quantifying judgments of anxiety which up to now have been made largely from inspection of the profile. It is shown that they may be of help in diagnostic and descriptive considerations and that they may be related to therapeutic change.

Received May 1, 1951.

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The Validity of Anxiety and Hostility Rorschach Content Scores among Adolescents

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In 1949, Elizur [1] reported a new method for deriving anxiety and hostility scores from the content of Rorschach protocols. Where unveiled anxiety ("a terrifying bat") or hostility ("two men fighting with each other") was evident, an *A* or *H* score was given, each receiving a weight of 2. Where the anxiety or hostility was less overt, the response was scored *a* or *h*, which received a weight of 1. An individual's score in each variable was the weighted sum of his scores in anxiety and hostility. Elizur found that graduate student psychologists with no Rorschach training achieved remarkably high agreement in the content scoring. An average correlation coefficient of .77 for eight scorers was found for the anxiety scoring, and of .82 for eight scorers in the hostility scoring. When the scores were correlated with three independent measures of anxiety and hostility, the author was led to the conclusion that the method "appears to be a valid technique for assessing the subject's anxiety and hostility. It is a fairly reliable instrument. . . " [1, p. 283].

In connection with a larger research study, the authors needed an instrument for differentiating among adolescents with respect to hostility and anxiety. Elizur's validation group consisted of Columbia University students ranging in age from 19 to 33, with a mean of 28.6 years and a standard deviation of 6.4 years. The present investigation was undertaken to determine whether Elizur's method would be fruitful and applicable for a group of young adolescents. It was also a more general study of the validity of this method for scoring Rorschach content.

Since the picture-story method represents another verbal response technique that might lend itself to content scoring, an effort was also made to determine if the Symonds Picture Story Test [3] could be scored for anxiety and hostility in such a way as to be differentiating among the adolescents studied.

Subjects

A group of 13 adolescent delinquents was chosen at random from the active case files of the Onondaga County Children's Court, Probation Department.[1] The average age in months of the delinquent population was 147.62 months with a standard deviation of 6.24 months. Their intelligence, measured by the vocabulary scale of the Wechsler-Bellevue Intelligence Scales, Form I, reflected itself in a mean vocabulary raw score of 14.14 with a standard deviation of 3.81.

A control group of 13 nondelinquent adolescents was chosen at random from a population of school children. The average age in months of the nondelinquent population was 146.61 months with a standard deviation of 6.19. Their intelligence measured in a similar manner as for the delinquent population, yielded a mean vocabulary raw score of 13.23 with a standard deviation of 2.28. Student's *t*'s were calculated to test the significance of the difference between the means of the delinquent group and the nondelinquent group with respect to age and vocabulary intelligence score. A *t* of .75 and .41 respectively for intelligence and age were yielded by the data. The hypothesis that there was no significant difference between the means could not be rejected. Sex differences were controlled by including the same number of male and female subjects in each group, i.e., there were 10 males and 3 females in each group. In an effort to control socioeconomic status, the control group

[1]We are indebted to Mr. Richard D. Greene, Chief Probation Officer of the organization, for his cooperation in the study.

of individuals was randomly selected from a school neighborhood which most closely corresponded to the status of the delinquent population.

For the purpose of the study the term "delinquent" is operationally defined as an adolescent who is known to community authorities as an offender. The 13 delinquent adolescents used in this study were all actively involved in probation procedures after having committed antisocial acts.

The rationale for the study is based on the assumption that delinquents are generally considered to be more anxious, hostile, and threatened individuals. The present study tests the validity of content analysis in differentiating such a group from a control group.

Results

The Wechsler-Bellevue Intelligence Scales, Form I, Vocabulary Test, the free-association part of the Rorschach test, and Series B of the Symonds Picture-Story Test were administered to each subject in one sitting. On testing the reliability of the scoring system with respect to both the Rorschach and the Symonds test the investigators achieved 83 per cent agreement.

Table 1

Means and Variances of Rorschach and Picture-Story Test Data

Variable*	Delinquent Group Mean	Delinquent Group Variance	Nondelinquent Group Mean	Nondelinquent Group Variance	t
R	17.77	18.46	27.15	67.67	3.65
RA	11.38	7.31	8.15	17.51	2.34
RH	10.00	29.38	4.00	1.92	3.87
P–ST A	11.31	16.98	10.31	2.52	.82
P–ST H	12.08	15.30	10.66	14.74	.93

*R refers to number of Rorschach responses; RA refers to Rorschach anxiety score; RH refers to Rorschach hostility score; P-St A refers to Picture-Story anxiety score; P-ST H refers to Picture-Story hostility score.

Table 1 presents the significant data for the delinquent and nondelinquent populations. In testing the difference between the Anxiety Content Score on the Rorschach for the delinquent and nondelinquent samples, a t of 2.34 is observed. The hypothesis that the population means are the same cannot be accepted.

In testing the difference between the Hostility Content Scores on the Rorschach for the delinquent and nondelinquent samples, a t of 3.87 is observed. Since the variances of the two samples are significantly different, the investigators followed the suggestion of Johnson [2] in entering Fisher's table of t. The t table is entered with $df = N_1 - 1 = N_2 - 1$ instead of $N_1 + N_2 - 2$. Here again the hypothesis that the population means of the two samples are the same cannot be accepted.

When the differences between the two groups of individuals were sought in Hostility and Anxiety Content Scores derived from the Symonds Picture-Story Test, no significant t's were found. A t of .82 for anxiety and a t of .93 for hostility do not reject the null hypotheses.

Discussion

The results point to the Elizur technique as an apparently valid one for differentiation between an adolescent delinquent group and an adolescent nondelinquent group with respect to anxiety and hostility. The technique is sensitive to the difference between the groups. Consequently it appears to be a worth-while method for deriving measurements in these personality variables. Moreover, this investigation seems to have successfully related at least one of the variables, that is, hostility, to its behavioral correlates. The delinquent group had "behaved" with hostility. The findings also lend support to the hypothesis that adolescent delinquents suffer anxiety as well as hostility to a marked degree.[2]

The findings as regards the Symonds Picture-Story Test are less clear. An attempt was made to use Elizur's method for scoring the Picture-Story Test, and no significant difference was found between the two groups. We may reasonably conclude that the Symonds pictures scored by the Elizur technique are not discriminating. Whether this be due to the character of the stimulus cards or the method of scoring remains an open question. Our observation was that the pictures were so negatively structured that they limited any pro-

[2]We may note in passing that the mean number of responses on the Rorschach is significantly different in both groups. However, the delinquent population having a lower total number of responses, still exceeded the control with respect to the variables.

jection of a positive kind.

Finally, it seems to the investigators, that the Rorschach content scoring may be fruitfully systemized with respect to variables other than hostility and anxiety, and that measurements so derived can be useful measures for psychological screening once normative data have been accumulated.

Summary

Elizur's method of Rorschach content analysis for deriving scores in anxiety and hostility was tested for its discriminating value with respect to delinquent and nondelinquent adolescents. The scoring method was also applied to the Symonds Picture-Story Test using the same group of subjects.

1. Significant differences between the means of the groups were observed for Anxiety and Hostility scores when Rorschach Content Analysis was used.

2. No significant differences between the means of the groups was found when the Symonds Picture-Story Test analysis was carried out in the same way.

Received October 17, 1951.
Early Publication.

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The Use of Co-therapists in Group Psychotherapy

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The use of two therapists in group therapy is a relatively unexplored field. While much has been written about the various roles and functions of the single therapist in group therapy, the possibilities which lie in the co-therapist method are still to be defined. This technique is in use at Chicago State Hospital. The purpose of this paper is to report preliminary observations and to outline a tentative rationale explaining the dynamics inherent in the method.

While originally the method was chosen to help solve the problem of training psychotherapists, for a reason similar to that of Hadden [3], it was soon apparent that a different dynamic social situation had been established. Many transference phenomena could not be adequately explained on the basis of what is known about transference and counter-transference in individually led groups. In addition, certain therapeutic gains were noted which also seemed to derive from the co-therapist arrangement. The literature reveals no explicit mention of the co-therapist technique in group therapy although a number of writers have either directly or indirectly alluded to potential benefits which might be derived therefrom. Dreikurs [1] reports his success using "multiple therapists" where one patient was involved. In discussing the role of the participant-observers in individually-led groups, Grotjahn [2] noted that the presence of such observers in the group stimulated additional material and aided the therapist in understanding his own reactions to the group. More directly, Hulse [4] felt that co-leaders of the opposite sex " . . . might stimulate the creation of a milieu that repeats family and society."

In terms of explaining the dynamics of the method, most references are vague, with the exception of Dreikurs who touches upon many of the phenomena observed by the authors. But even Dreikurs' observations are lacking in applicability in that phenomena to be applied to an actual group must be studied within the context of the group itself. The authors have then concerned themselves with the complex relationships growing out of the co-therapist arrangement in a true group therapy setting.

At Chicago State Hospital the co-therapist method has been successfully employed with groups of schizophrenic patients concurrent with their receiving insulin therapy. All patients on the insulin wards receive group therapy, and in this sense our groups are heterogeneous. A selective factor operates however in so far as only certain patients are chosen for insulin treatment. These patients are generally younger than those in the general hospital population, the mean age being 24 years for both males and females; they are first or second admissions, and are usually without histories of long-standing psychoses. Diagnostically they include the catatonic, the paranoid, and the undetermined subgroups with no noticeable preponderance of any one subgroup. The observations made are necessarily based upon these groups and at present generalizations to the numerous psychoneurotic complaints can at best be highly speculative.

The groups meet twice weekly for one hour periods and are comprised primarily of members of the same sex, with the exception of one group which is mixed. The therapists are all males, members of the psychology department. The average patient remains on the insulin wards for approximately three months, and thus attends anywhere between 25 and 30 group therapy sessions. Although not compulsory, attendance is implicitly required, as group therapy is an integral part of the treatment afforded insulin patients.

Therapy is directed towards a clarification

of patients' present attitudes rather than an intellectualized investigation of their past histories. The current reality of their reactions to the therapists and to each other is emphasized. The technique is both interpretive and supportive. Where indicated, factual information is also supplied, at times in the form of mimeographed sheets which serve to stimulate the patients and to lend continuity to the sessions. Mimeographed materials, which consist of brief statements concerning mental illness, common reaction patterns among mentally ill persons, etc., are distributed at the close of group sessions at irregular intervals determined by the therapists. An attempt is made to establish rapport in the first few sessions, and once the group spirit is formed the transference phenomena, described below, are manipulated so as to yield insights based upon current behavior.

The Family Setting

Of all the factors operating in the co-therapist method the most outstanding is observed to be the simulated family setting which is created by the presence of two authority figures. The child must learn to adjust to a reality determined by the presence of two adult figures. Since the average family includes two parents and siblings there is a greater chance that any one patient will be more highly stimulated to act out his conflicts in a group that approaches the social norm. Especially for the schizophrenic who cannot always verbalize his feelings, the symbolic value he attaches to the therapists (parents) and to the group members (siblings) becomes an important transference phenomenon which can be handled so as to yield insights which would be difficult to obtain were only one therapist present. Of course few patients will be consciously able to recognize their feelings of being members of a family group. Our most direct evidence comes from unconscious verbal slips and from irrational behavior growing out of the relationship patients have with their therapists.

Unconscious feelings about being members of a family group are most easily detected among those patients who are behaviorally regressed and who ordinarily appear out of contact. Mrs. (H. F.), for instance, is a patient who demonstrates the phenomenon of drifting in and out of group discussions, of suddenly verbalizing bizarre thoughts which on the surface seem to be little related to the trend of conversation. During a heated argument between two paranoid women in a mixed group, Mrs. (H. F.) asked, " . . . is there a snake in the garden? What kind of a family is this?"

A more striking example of the effect two therapists can have upon a withdrawn patient can be seen in the case of (A. Q.). A young unmarried male of twenty, he grew up without a father in the home, and broke down when his mother told him that he should be out on his own. Ordinarily withdrawn and unable to verbalize feelings, he vividly demonstrated his feelings of parental rejection one day when one of the therapists found it necessary to leave the room for a moment. He became visibly disturbed, and in an excited voice asked, "Are you leaving Mr. (X)?" When asked what he meant he said: "Something is in the air. It is missing when you aren't here. Now we seem to be all together again. It's complete when both of you are here. But there are details here. Sitting in one space by itself seems empty. It seems more like a classroom when one person is here."

It was clear that he had symbolically reenacted the felt loss of the father figure, as well as the rejection by the mother. The absence of either therapist stirred up reminiscences of his own incomplete home. The panic was therefore an emotional response which probably would not have occurred as vividly in an individually-led group.

If the co-therapist method is meant to simulate the family then it might by concluded that the two therapists should be of opposite sexes. It has been felt by workers in group therapy that a theoretically more literal reproduction of mother and father may be required to obtain results comparable to those achieved by more intensive individual methods. Our experiences to date indicate that the two therapists need not be of opposite sexes. As might be expected, the physical characteristics of the therapists become less important than the subtle psychological differences which schizophrenic patients can easily detect and respond to. One therapist will be seen as more aggressive and masculine, the other as more protective and feminine; one will be reacted to with more or less fear and guilt; one will be closer to the idealized image of the patient. Very direct evidence of these feelings can be gleaned from the following transcript:

Therapist: We have been meeting together for some time now and the two of us have been wondering whether you felt differently about us as individuals. That is, would you feel freer to come to one or the other of us with your problems, etc.

B. H.: You mean what the loss of one would mean. . . I feel an emotional response to each, a rapport to both. But Mr. (X) resembles more a teacher and I am more at ease with Mr. (Y). I would feel freer with Mr. (Y); I feel that Mr. (X) is more of a disciplinarian.

L. B.: *I* feel the opposite of (B. H.). Mr. (Y) seems more serious than Mr. (X) and I would feel freer with Mr. (X).

S. A.: Well, they are both qualified for the job. When one is absent the other can carry on, even if one has seniority over the other. It wouldn't make any difference whom I'd see . . . either one could give me the advice I'd need.

J. S.: Is the class going to break up? What are you leading up to?

L. S.: I feel like (S. A.). They both seem the same to me.

R. C.: Mr. (Y) seems more curt. He gets right at it.

S. V.: He doesn't beat around the bush. He's been through the mill.

B. H.: Mr. (Y) is the typical sailor; he's been around. Mr. (X) is the school teacher type . . . , etc.

The patients will have a primary reaction of dependence, anger, seduction, ambivalence, etc., to either one of the two therapists. This primary reaction will represent the major method of adjusting to the more important of the two therapists. Once the primary reaction is fixed the other therapist readily assumes, in the patient's mind, the secondary qualities associated with the less dominant parent. The dominant parent may in reality be either the mother or the father. Among schizophrenics, however, it is generally felt that the mother plays the more important role and certainly our patients can pick out the more passive or aggressive therapist who for him will truly represent the mother. In some cases, of course, as can be seen above, the personalities of the two therapists are not adequately differentiated, and these cases have been found to experience the most severe conflicts in relating to others.

How Patients Use the Family Setting

So far we have presented material highlighting the most basic difference between individually and dually led groups, namely the simulated family setting which emerges naturally in the co-therapist arrangement. Granted that patients unconsciously respond to the two therapists as parent surrogates, and to the other patients as sibling surrogates, in what ways do patients utilize this setting in working out their problems?

If the patient's home was marked by constant strife between his own parents then he will readily misinterpret the statements of the therapists, making them appear in disagreement. He will seek out innocent statements and blow them up, confronting first one and then the other with "proof" that they have misinterpreted his case and that they cannot even agree between themselves. If, on the other hand, the patient's adjustment at home was one of currying favor from one parent so as to more safely combat the threat felt to come from the other parent then this too will be reenacted in the group meetings. If the patient could not face a close relationship with either parent, but could relate more successfully to a sibling closer to his own depreciated position in the family, then he will direct remarks, questions, and asides to other group members in the same furtive manner which characterized his true home adjustment. Those patients who were particularly sensitive to the rejection of one of the parents will make a habit of running to one specific therapist for support and consolation both during and after the therapy hour.

Apropos of the deep feelings of unworthiness and insecurity experienced by schizophrenic individuals, and how the simulated family setting is used in order to display these feelings, it is worth citing the following example. The patient, a young man of 19, fairly consistently mistook one therapist for the other, both during the sessions and on the ward. At group meetings he would address a question to one of us, sometimes calling that therapist by the other's name and then responding as if he had really spoken to the named therapist. When questioned closely about this mechanism he revealed that when he received an unacceptable answer from one therapist he would automatically attribute it to the silent therapist. Such a severe perceptual distortion indicates a profound inability to accept rejection no matter how minor. In this case the patient could not consciously accept the fact that his parents had rejected him. He found it necessary, when confronted by an apparently rejecting parent in this re-created family setting, to defend himself against rejection through the displacement of feelings. The simulated family, with its two parent figures, allowed him to employ and hence display this characteristic means of adjusting to parental rejection.

A final example will illustrate another way in which patients use the family setting, and in this

case how their reactions to minor disagreements between the therapists can mirror and exemplify the stability or instability of their own homes. At one session we disagreed on an interpretation of a series of statements made by one of the patients. Although the disagreement was a minor one the whole group responded, at first by sudden silence. Two fairly verbal patients broke the silence and took sides. While apparently not motivated by conviction they felt strong enough to take a stand, even in the face of possible rejection by the other therapist. These patients were later discovered to be the most secure in feeling that their parents would accept them when they were released. Most of the patients, however, did not know what to do in such a situation and their immediate reaction was one of withdrawal and uncertainty. They feared the sudden dissolution of what had up to that point been a fairly stable and predictable environment.

Additional Observations

Aside from the question of techniques, and the major therapeutic advantage of the simulated family group, the use of co-therapists in group psychotherapy offers other advantages. At the same time certain cautions have to be observed. Up to the present time we have noted the following positive factors:

1. The co-therapist method provides a unique learning experience for the beginning therapist. Not merely an observer, the young therapist soon begins to feel and react to the challenges inherent in dealing with his patients. He is not defined as an observer, learner, or outsider. He becomes a necessary member of the group, a true *co*-therapist.

2. During sessions the therapists are better able to objectively evaluate responses of both the patients and each other. This is made possible by the fact that the therapists are at all times integral members of the group although they are not always actively engaged in speaking with the patients. They are thus free to observe without stepping out of character.

3. For any group it has been our observation that two therapists will offer a broader dynamic area to which the group can react. Few therapists can treat all kinds of patients with equal success. Whatever may be the blind spots of the individual therapists, the chances are slight that they would occur in similar areas where two therapists are involved. For example, if patient A is unconsciously rejected by one therapist it is more than likely that he will not suffer the same rejection at the hands of the second therapist.

4. In group therapy which is other than didactic [5] or repressive-inspirational (e.g., Alcoholics Anonymous) not more than six to eight patients can be adequately handled by one therapist. In groups such as ours, however, where dynamic content and ongoing relationships are actively manipulated, it has been possible to treat twelve patients with no falling off of the necessary personal contact with individual group members.

In addition to the above, one major caution should be observed, i.e., the correct matching of the co-therapists. As Slavson [6] points out, group therapy must supply corrective parent figures since patients have been traumatized by identifying with incorrect models or images. This fact is especially important when group therapy is so set up as to provide two actual parent surrogates. The co-therapist method, by its very nature, is a potentially powerful stimulus. In some respects it is more fraught with hazards than groups which are individually led, for here the patient is truly confronted with a situation closer to the reality of his own conflicts. Subtle intrafamily influences in the past have often made him the scapegoat for the unresolved conflicts of his own parents. If now, in group therapy, the patient senses the same lack of respect, the same disharmony and infantile competition which marked his early years, then the basic purpose of the co-therapist method will have been lost. The patient will have no recourse but to further strengthen sick defenses which were erected during his childhood. For this reason people who work as co-therapists must be reasonably conscious of their feelings for one another. Systematic evaluations of therapy sessions are extremely important, and honest and open criticism is to be encouraged.

If the above conditions are met then the full possibilities of the co-therapist technique can be realized. Its rewards include not only a speedier method of bringing repressed material to the surface but also an excellent means of handling psychotherapeutic training.

Received October 21, 1951.
Early publication.

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The Mechanical Third Ear

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In our department offices, we have a sound system which allows you to listen in on the proceedings in another room. One day, while monitoring a student-patient psychotherapy session, one of the authors heard the following conversation:

Patient: "My mother does some of the meanest things to me but . . "
Therapist: "You don't like your mother."
Patient: "Well, I don't see why she is so unfair to me but I . . "
Therapist: "She makes you very angry at her. Sometimes you are sure you hate her."
Patient: "Well, I . . . I . . . guess but I . . . . "
Therapist: "And it makes you feel awful to hate her."

The patient seemed to be on the point of becoming panicky. So was the supervisor. He hurried to the therapy room, knocked on the door and said to the student, "Look, your patient is trying to tell you that she is ambivalent, that she also loves her mother. Now go back in there and help her to express it." He did. The student, the patient, and the supervisor were relieved. A therapeutic impasse was avoided.

The incident led to a long pondering of the many technical intricacies involved in the training and supervision of students and interns in a clinical psychology program. Outlining and planning a course of training is perhaps the least complicated aspect of the total endeavor. The content of the program is easily established; the aims and the goals of the course can be clearly stated. But how can we determine whether the goals are ever achieved?

The usual method of supervision requires the trainee to present his supervisor with detailed notes regarding his work. If the area is psychotherapy, process reporting of the patient-therapist relation serves as a basis for supervision. In testing, verbatim recordings are utilized. In research, statistical data and adherence to strict methodology provide a medium for communication between supervisor and student. In each instance the supervisor carefully and thoughtfully peruses the material, then makes comments and criticisms or discusses certain points with the student. He lets the student know in what manner his work is proper and adequate and the way in which it is improper and inadequate.

Probably only in the area of research can this method of supervision be utilized with some assurance that desired and intended learning is taking place. In the process of reporting psychotherapy interviews, the trainee soon learns to remember and to include in his notes those items which are sure to please the supervisor. When you hear skilled and experienced psychotherapists vehemently deny having said the words which are irrevocably preserved on a wire recording, how can we have any confidence that the students' reports of a psychotherapy session capture any of the important elements or even the essence of the interpersonal relationship? In diagnostic testing, one might contend that such dangers are easily avoided by faithful and accurate verbatim recordings, not only of test responses, but of all verbal interaction in the testing situation. Even if it were physically possible to achieve a condition of perfect recording, only a small portion of the total process would be contained in the record.

In our criticism of the presently popular method of supervision, we might be accused of erecting meaningless and insignificant straw men. Sound recordings will easily capture the important elements which we claim are missing. Furthermore, with a one-way vision room the supervisor is able to observe much of the nonverbal interaction between a student and his patient. Under these conditions the supervisor can take in the total situation; with great confidence he can, and does, say: "Student,

when your patient said that, you should have said this." In the early stages of training when the student still idealizes the supervisor, the trainee's reaction is: "Would I were clever enough to think of and to respond with such brilliant statements." A bit later, the supervisor is shocked by the bold trainee who questions his previously unchallenged infallibility with: "How do you know that your response would have been more proper or productive than mine?" The honest supervisor would have to admit that he doesn't know. He would have to acknowledge further that his suggested verbalization was chiefly the product of a theoretical construct which may or may not be true. The supervisor might also recognize that in spite of all the technical gadgets which allow him invisibly to intrude upon a therapy or a testing situation, it is impossible for him to become a participant in the process. The trainee and his patient become involved in an emotionally tense experience, which in a large measure is the process of therapy itself. Even the most empathic supervisor may fail to grasp the true nature and tone of the student-patient relationship.

From the Ekstein [1] experiment, it may be concluded that this objection also is unimportant. It is unnecessary for the therapist to insinuate himself into the student-patient relationship. The sooner he can remove himself from the position of a monitor sitting on the student's shoulder during a therapy session, the faster will the learning of psychotherapy progress. What is really important is the relationship between the student and the supervisor. The material from the student-patient situation is more or less incidental to the real growth process taking place between supervisor and student. It doesn't matter whether or not the student accurately reports the therapy session.

We do not mean to imply by this that there is no concern for the patient. Indirectly he receives benefit as the student benefits from his relationship with the supervisor. But wrong interpretations, insensitivity, personal conflict and involvement, these and other factors can cause serious setbacks for a patient. The harm, for the patient and for the student, may be irrevocable and the status of clinical psychologists as therapists remains unimproved.

Diagnostic testing under present methods of supervision suffers the same lacks. Perhaps the chief criticism against observational and verbatim note methods of test supervision is the inefficiency of the process. In most training setups, service is demanded in the form of useful and meaningful test reports. When crucial inquiry is omitted or significant responses remain unexplored, the supervisor may scold the student, help him to salvage from the available data an inadequate report, or he may, if possible, call the patient in for further testing.

These conditions left us, as supervisors, with a very helpless feeling. We needed some way of supervising the activity of a trainee while the activity was going on. We were unable to find reference to any method of supervision which met this criterion.

We are not sure of the steps by which we came to the device now called "The Mechanical Third Ear." We are sure we owe Theodore Reik our gratitude. With his third ear, Reik "listened" to the unverbalized portions of a patient's productions. Our third ear needed to hear only the voice of the supervisor and to do that without the patient knowing that the student was "hearing voices." The new and greatly improved hearing-aid devices provided us with an instrument for our early trials with the technique. We extended the wire, which connects the earpiece to the chest microphone and amplifier, to the observation side of the one-way vision room. Outside the testing room, before meeting the patient for the first time, the student adjusted the earpiece, with the wire leading from it concealed under his coat. When seated at the testing table, he connected his wire to the one leading to the observation room. Our present apparatus consists of a miniature radio transmitter and receiver. Now the student can move freely about the testing room and still remain in constant contact with the supervisor.

It was decided to begin experimenting with the mechanical third ear in diagnostic testing situations rather than in psychotherapy sessions. Testing is usually a one-or-two-contact affair whereas psychotherapy may go on forever. The trainee with the earpiece is, by implication, deaf and must maintain a semblance of deafness during his contacts with the pa-

tient. A patient might have some question about a therapist who needs a hearing aid one day and who the next week, without the earpiece, hears a soft whisper.

The device has been used with clinical psychology interns and graduate students who were relatively inexperienced in diagnostic testing. The patient-subjects consisted of children and adults with a variety of personality difficulties. Tests used included the representative items of a standard battery.

The amount of direction ranged from 3 to 30 instructions per testing hour. In some instances, a prearranged signal (for example, "listen, listen") preceded each direction; on other occasions the student was given no idea of how or when instructions would come through. The supervisor was careful to give directions only during the silences or while the examiner was writing.

The children, in their straightforward way, asked the examiners about the hearing aid. Each trainee had been instructed to answer questions about the device in this manner: "This way I can listen to what is told me." No one became suspicious of the true nature of the instrument. Had a patient questioned further it was planned to give a truthful explanation. Although it might not be necessary to reveal the secret of the gadget in testing, the psychotherapist would not dare jeopardize the integrity of the relationship in this way. We had hoped for a suspecting patient so that we might observe his reaction to a situation which is almost certain to provoke paranoid ideation. The adults, even the very sick ones, asked no questions about the hearing aid. Maybe the earpiece has achieved the status of eyeglasses which are rarely looked upon with suspicion.

Some graduate students got off to a very poor start with their subjects. Tension may have been increased by the factors of observation and the mechanical third ear. In each instance, however, the subjects were children with borderline intelligence and the testing was started at too high a level. The students became somewhat panicky over their inability to establish rapport or to elicit a response. By way of the third ear the student was advised to drop to an appropriate level. This simple direction enabled the examiner to recover and to salvage a testing situation which was headed for disaster.

Other graduate students had subjects with at least average intelligence. With them it was possible to concentrate on the finer points of the subject-examiner relationship, as illustrated by the following incident. Each time one boy failed a question, he pulled a nickel out of his pocket and showed it to the examiner. With "true testing objectivity" the examiner ignored the byplay and proceeded to the next item. Over the wire came the comment, "He wants to be friendly with you." The student was able to pause in his hot pursuit of test scores to be friendly with the boy. The matter of over-objective test administration in which the examiner behaves like an automaton, can be counteracted easily with the third ear device. The broader clinical usefulness of an intelligence scale can be captured and demonstrated at the moment when you can communicate with the examiner. For example, one subject failed both series of four digits forward. Before he could go on to digits reversed, the student was told to try the five series. The subject repeated five and six digits correctly. The incident also provided posttest discussion material of much greater value than "you should have tried five digits."

The third-ear device seems to have its greatest usefulness in the supervision of projective testing techniques. With the highly structured intelligence scale it is fairly easy to give instruction in the proper method of test administration, but only when it is used for psychometric purposes. Adherence to a rigid technique of administration destroys its projective usefulness. With the less structured tests, rigid techniques produce sterile protocols. Important leads remain unexplored. It is not easy to teach beforehand how, when, or where to inquire, nor is "inborn" sensitivity to nuances and innuendoes a frequent facility among inexperienced students. Without giving specific illustrations, it is obvious how useful it can be to be able to suggest more or less inquiry, to give clues for eliciting determinants, or to put a student on the trail of an important TAT theme.

General test behavior is often missed completely by the novice tester who is overly-occupied with materials and techniques. It is common knowledge that nonverbal communi-

cation often provides the most important basis for an accurate understanding of personality dynamics. This is equally true for the tester and for the subject. With the third ear it is a simple matter to instruct—"You are moving away from your patient. Lean toward him." Or, "Notice that your patient moves back on certain cards, forward on others; record that movement. Inquire later." One student, smugly satisfied with the excellent rapport he had established with an attractive female patient, was rudely jolted with this: "Notice how she seduces you, not with words but with her body movements and mannerisms." After this the student was able to settle down and get a test.

All students and interns felt the third-ear experience was worth while, and are eager for more. The interns, who have struggled for a longer time with difficulties of clinical sensitivity, were especially appreciative of the help received through immediate supervision. All agreed that it was an excellent learning experience.

We are still in the very early stages of the use of the third-ear device. With each experience we, too, learn much and are able to correct and improve the techniques of this method of supervision. Students and interns soon let us know that directions were too wordy. They also informed us that it was not possible to use direct quotations from us. "Tell it so that we can feel what should be said or done." It must be emphasized that the method makes definite demands upon the supervisor and that certain shifts of supervisory sets are required. In a supervisory session following testing it may be all right for the supervisor to laugh with the student over a funny incident in the testing. The following incident taught us that laughter is not all right over the third ear. One student was testing in a very rigid manner when he got the one word: "Relax." In his eagerness to comply, the student almost fell out of the chair. It *was* funny, and so the supervisor laughed before he remembered to switch off the microphone. The remainder of the testing session was not very productive.

For both the student and the supervisor, easy usefulness of the device is in direct proportion to the frequency with which it is used. The interns who have several turns with the third ear felt more comfortable the second time than they did the first. By the fourth time some interns had achieved the trick of dividing their hearing, giving one ear to the patient and the other to the supervisor. Perhaps our only conclusion at this point is this: practice with the device increases its usefulness. We are sure that students do not acquire an addictive dependence upon the device. We are not ready to make any other claims. We are satisfied that the mechanical third ear can help us to do a better job in teaching clinical psychology and in supervising the training of student clinical psychologists.

Received October 29, 1951.
Early publication.

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NEW BOOKS AND TESTS

Books

Buros, Oscar K. (Ed.) *Statistical methodology reviews, 1941-1950.* New York: Wiley, 1951. Pp. x + 457. $7.00.

This volume, the third in Buros' series on methodology, lists 342 statistical methodology books published or reviewed in the ten-year period 1941-1950. Almost every title is followed by excerpts from selected reviews of the book which have appeared in a wide variety of journals. For the most part, the editor has elected to reproduce the evaluative portions of the reviews. Consequently, the reader has access to the reviewers' criticisms of each book, although at times he will feel the lack of a straightforward summary of a book's contents. Since it is cross-indexed by author, journal, publisher, subject, and title, the volume is handy and easy to use. The books and reviews included here represent an unusually wide coverage of the field of statistical methodology, ranging from psychology and education to biology, physics, economics, chemistry, and engineering. The psychologist who uses the volume cannot fail to be impressed by the recurrence, in diverse and unfamiliar settings, of statistical problems and techniques familiar to him. Perhaps more importantly, the psychologist is likely to discover in other fields new and useful hypotheses and procedures which would have eluded him had this compendium not been published. *Statistical Methodology Reviews* should be a helpful reference to those who are concerned with selecting textbooks in statistics and methodology, with maintaining critical attitudes toward statistical publications, and with widening their views of methodology beyond the field of psychology.—*A. M.*

Cory, Donald Webster. *The homosexual in America: a subjective approach.* New York: Greenberg, 1951. Pp. xvii + 326. $4.00.

The book grows out of 25 years of personal experience of the author in male homosexual life in America. He frankly pleads the case for this "unrecognized minority" stating the hostilities against them and the justification used, the laws under which they may be prosecuted, the documents related to their status as government employees, and the fiction devoted to the theme. There is an intimate picture of the vocabulary, meeting places, *gay* bars and *drags* (transvestist parties), and the search for marriage-like unions between males. There are chapters on sublimation, "cure," married homosexuals, causation, and chapters addressed to parents and to homosexuals. Mr. Cory's biggest difficulty is to achieve consistency in treating the vast individual differences among homosexuals, and the tendency to regard them as a type. In urging homosexuals to accept their basic personality structure which seems healthy, he also erroneously (the reviewer believes) implies that this means accepting a given mode of overt expression of their personality as quite fixed. Although his definition of homosexuality is indeed inclusive, Mr. Cory seems most concerned with those who make their adjustment by affiliation with the *gay* society. Albert Ellis' brief introduction is a critical evaluation of the book from a psychologist's standpoint.—*F. McK.*

Flügel, J. C. *A hundred years of psychology.* (2nd Ed.). London: Gerald Duckworth, and New York: Macmillan, 1951. Pp. 424. $3.25.

The publication of its second edition again brings attention to Flügel's graceful and informative little history of psychology. It has never pretended to be profound or exhaustive, but is a useful instrument for introducing students to the background of their science and for stimulating them to consult original sources. Students of clinical psychology find Flügel particularly relevant to their interests because of the full and unbiased consideration that he gives to dynamic psychologies and to the problems of abnormality. The original edition surveyed psychology mainly in terms of epochs and men, from Herbart in 1833 to Spearman and many other contemporaries in 1933. The present edition reprints unchanged all the chapters of the excellent earlier version. Then, like all too many "revisions" it appends a 37-page chapter, "Developments 1933-1947," in an attempt to make the volume modern. The added chapter lacks the systematic organization of the original book, and is little more than a rambling inventory of a little of everything—military applications, applied social psychology, diagnostic tests, group therapy, somatotypes, and

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Note: The reviews were prepared by the Editor and the Associate Editors, who may be identified by their initials.

Beginning with this issue, books whose interest to clinical psychologists is judged to be peripheral, and most nontechnical or "popular" books, are listed but not reviewed.

ESP. Flügel's history remains a valuable instructional resource, but the revision adds little to its merit.—*L. F. S.*

Fromm, Erich. *The forgotten language.* New York: Rinehart, 1951. Pp. xi + 263. $2.50.

The Forgotten Language is an introduction to symbolism, and to the understanding of symbols in dreams, fairy tales, and myths. Fromm ably supports his thesis that symbolic language expresses inner experiences and feelings that cannot readily be formulated in conventional social communication. In dealing with "universal" symbols, however, he involves himself in a net of contradictions. "Universal" symbolism "is shared by all men" and "does not have to be learned" (p. 18), yet Fromm's own illustrations of the symbolisms of fire and water show clearly how their significance differs from one culture to another. A more convincing approach would have dealt explicitly with symbols as the results of individual learning processes, influenced in various ways and degrees by the cultural factors that influence learning.—*L. F. S.*

Hamilton, Gordon. *Theory and practice of social case work.* (2nd Ed., Rev.) New York: Columbia Univ. Press, 1951. Pp. vii + 328. $4.00.

For more than ten years a standard text on social case work, the new revision should make this volume even more important. New developments in concepts and in practice are incorporated. So much closer have social case work and psychological counseling grown during the past ten years, that at least half the volume could reasonably be included in modern texts on clinical psychology. The content of the chapters: "The Use of Relationship," "The Interviewing Process," "Diagnostic and Evaluation Processes," and "Methods of Treatment" are as applicable to the work of the clinical psychologist as they are to that of the social case worker. In fact, the author characterizes social work as a psychosocial process; this is in complete agreement with the modern concept of clinical psychology and psychological counseling. Graduate students in clinical psychology and counseling would do well to familiarize themselves with the dynamic point of view expressed throughout the revised edition of this book.—*M. K.*

Miller, George A. *Language and communication.* New York: McGraw-Hill, 1951. Pp. xiii + 298. $5.00.

The author states the object of this text is "to summarize for students of psychology the results of scientific studies of language and communication." It opens with a chapter on phonetics, and then covers the perceptual, statistical, semantic, and behavioral material pertinent to the subject. The coverage is broad and the summarization of existent work is good. The author's style is pleasant and makes for easy reading. Since language and communication are usually prominently involved in any severe adjustmental difficulty, the clinician will find much in the volume to interest him. The breadth of approach and the wide reference to the entire field of psychology is refreshing after the limitation and constriction imposed on many of our texts by the assumption of a narrow theoretical viewpoint.—*W. A. H.*

Rondell, Florence, and Michaels, Ruth. *The adopted family.* Book I, *You and your child.* Book II, *The family that grew.* New York: Crown Publishers, 1951. Pp. xiv + 64, 24. $2.50.

A boxed pair of attractive books, one for the parents of adopted children and one for the adopted child himself. The nontechnical guide for adoptive parents, prepared by two social workers experienced in the adoption field, wisely avoids *do's* and *dont's* and concentrates on giving the parents a warm understanding of the satisfactions, needs, and problems of the adoptive family. The little book for the child tells a story of how he was chosen and loved. —*L. F. S.*

Shuttleworth, Frank K. *The adolescent period: a graphic atlas. The adolescent period: a pictorial atlas. Monogr. Soc. Res. Child Developm.,* 1949, 14 (1, 2). Evanston, Ill.: Child Development Publications, 1951. Pp. 273, v + 69.

The 453 charts in the *Graphic Atlas* speak louder than many words. With no text and only minimal captions they display many facts, from census data and from other normative studies, on adolescent growth, health, abilities, education, occupations, and sexual development and adjustment. The monograph is a thorough revision of an earlier one issued in 1938; 192 of the charts are new. Drawn from many sources, the graphs vary greatly in quality, from the superb to the barely intelligible. One wishes that cost had not prevented redrawing them more uniformly. The smaller companion monograph, the *Pictorial Atlas,* consists of 52 half-tone figures combining some 400 well-reproduced original photographs to illustrate physical growth, sexual maturation, and differences in body builds among normal boys and girls. The sets of consecutive annual photographs of girls from childhood to maturity are a rare resource.—*L. F. S.*

Wilbur, George B., and Muensterberger, Warner. (Eds.) *Psychoanalysis and culture.* New York: International Universities Press, 1951. Pp. xii + 462. $10.00.

This is a volume of essays published in honor of Geza Roheim, on the occasion of his sixtieth birthday. The volume as a whole is a fine exemplification of the enormous influence exercised by Roheim in several fields. It includes eight essays on Culture and Personality, nine on Sociology, two on Epistemology, two on Mythology, one on Linguistics, and

five on Art and Literature. The contents range from observational studies on children and on anthropological field data, through theoretical discussion of such analytic concepts as identification and of such problems as malingering, to some choice examples of the extremes of psychoanalytic writing. Of particular interest to psychologists are the article by Spitz on Environment vs. Race, based on his careful studies of children in several institutional environments, and the contribution of Axelrad and Maury on Identification as a Mechanism of Adaptation, not to mention the bitter footnote on academic psychologies in the article by La Barre on Family and Symbol.—*A. R.*

U. S. Federal Security Agency. Children's Bureau. *Infant care.* (9th Ed.) Washington: U. S. Government Printing Office, 1951. Pp. vi + 145. 20¢.

America's perennial best seller, of which over 28 million copies have been distributed since 1914, has again been completely rewritten. Most psychologists will approve its recommendations. Permissive and infant-centered practices are advocated for feeding, "mothering," weaning, and toilet training. At the same time, the pamphlet recognizes that parents are people, too, who need both to enjoy their baby and to live their own lives. As an example of communication, *Infant Care* is superb; one often pauses to admire the skill with which really difficult concepts are expressed in the simplest nontechnical language. Any student of child development can learn much from the pamphlet, and psychologists can recommend it to their friends with confidence. —*L. F. S.*

Valentine, C. W. *Psychology and its bearing on education.* New York: Philosophical Library, 1951. Pp. xviii + 674. $6.00.

Valentine presents a full survey of the psychological knowledge and research basic to educational processes and teaching practices. The 36 chapter titles reveal how complete is the coverage, including the modern psychological view of mental abilities, desire and striving, sympathy, anger, suggestion, innate bases of conduct and drives, sex education, the unconscious, play and "the play way" in education, collecting, learning and remembering, and vocational guidance. The presentation is excellent. The reader is led from his own experiences and interests to the broader aspects of human development and behavior. The author stresses the areas in which there is general agreement among psychologists, while not ignoring the situations where there are differing viewpoints. The book is written for a British audience. Its illustrations are from British schools, and its psychological sources are British. These considerations may prove an obstacle to its use as a textbook in the United States, but do not destroy its stimulating value to students of educational psychology.—*B. M. L.*

Tests

Bennett, George K., Seashore, Harold G., and Wesman, Alexander G. *The Differential Aptitude Tests—Fifth research report.* New York: Psychological Corp., 1951. Pp. 24.

The fifth of a series of research supplements to the *DAT Manual* is notable for its tables of revised norms for Form A of the tests. The new norms are based on over 36,000 cases of wide geographical distribution. Other information in the research report includes new data on the use of the tests in three colleges, on their correlations with other tests, and on their consistency over a three-year interval.—*L. F. S.*

Books Received

Hollis, Ernest V., and Taylor, Alice L. *Social work education in the United States.* New York: Columbia Univ. Press, 1951. Pp. xviii + 422. $5.50

Hoslett, Schuyler Dean. (Ed.) *Human factors in management.* (Rev. Ed.) New York: Harper, 1951. Pp. xi + 327. $4.00.

Joad, C. E. M. *The pleasure of being oneself.* New York: Philosophical Library, 1951. Pp. 204. $3.75.

Montagu, Ashley. *On being intelligent.* New York: Henry Schuman, 1951. Pp. x + 236. $2.95.

Osborne, Ernest G. *The family scrapbook.* New York: Association Press, 1951. Pp. xv + 457. $3.95.

Ploscowe, Morris. *Sex and the law.* New York: Prentice-Hall, 1951. Pp. ix + 310. $3.95.

Runes, Dagobert D. (Ed.) *Spinoza dictionary.* New York: Philosophical Library, 1951. Pp. xiv + 309. $5.00

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An Evaluation of Personality-Trait Ratings Obtained by Unstructured Assessment Interviews. Ernest C. Tupes, United States Air Force. ‡317, $1.00

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